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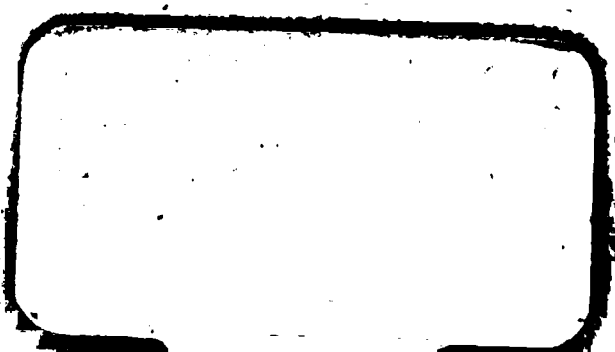
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AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

BUREAU OF ANIMAL INDUSTRY

FRIDAY, DECEMBER 14, AND SATURDAY,
DECEMBER 15, 1917



WASHINGTON
GOVERNMENT PRINTING OFFICE
1918

AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Friday, December 14, 1917.

BUREAU OF ANIMAL INDUSTRY.

The CHAIRMAN. We will take up the estimates of the Bureau of Animal Industry, on page 80. I would say, gentlemen, that since this committee last met the Chief of the Bureau of Animal Industry, Dr. A. D. Melvin, who was connected with the Department of Agriculture for many years, has passed away, and I believe, as chairman of the committee, I ought to express for the committee and for the Congress our regrets at the death of this good man. I have known Dr. Melvin personally for 18 years, and I do not believe that the Government had a more efficient man in its service. Dr. Melvin's place will be taken by Dr. Mohler, who will present the estimates.

STATEMENT OF DR. JOHN B. MOHLER, CHIEF OF THE BUREAU OF ANIMAL INDUSTRY, UNITED STATES DEPARTMENT OF AGRICULTURE.

Dr. MOHLER. Mr. Chairman and gentlemen, as a preliminary statement I would like to call your attention to the fact that the recommendations of the bureau cover a net increase of \$82,570. This increase is divided among three lines of work. One line is the animal-husbandry work, the second is the hog-cholera eradication project, and the third is the tuberculosis-control project. The other increases are merely apparent and not actual, on account of the fact that the lump fund has been correspondingly reduced in all cases. As, for instance, in the first item, No. 11, on page 30, there is an apparent increase of two clerks of class two, but the lump-fund roll has been correspondingly decreased.

The CHAIRMAN. Dr. Mohler, is that true of all of your statutory increases?

Dr. MOHLER. Absolutely. The lump fund in each case has been correspondingly decreased.

The CHAIRMAN. You provide for no new clerks on your statutory roll at all except by way of transfer?

Dr. MOHLER. None at all.

The CHAIRMAN. And you have no increases in salaries on your statutory roll?

Dr. MOHLER. None at all.

The CHAIRMAN. Does that cover the question, gentlemen? Are there any questions on that? If not, Doctor, take up your real increases. On what page are they to be found?

Dr. MOHLER. The first actual increase asked for is on page 34, item 64.

Mr. RUBEY. I just want to ask one question. On page 31, item 22, under the note I notice you state there is a decrease of 50 in the number of clerks in the \$900 grade. I read that over the other evening, and I was just wondering whether or not you were able to get along with that decrease in the number and how you managed that?

Dr. MOHLER. You will note from the statement under that item that we propose to drop 50 clerical positions at \$900, a saving of \$45,000, for the sole reason that we can not get clerks or stenographers at that salary, and at the present time we have a less number of clerks at \$900 than is indicated in this note. We are getting along by employing newly appointed stenographers at \$1,200 on the lump-fund rolls.

Mr. RUBEY. But have you actually decreased the number of people you have in your office?

Dr. MOHLER. We have only decreased the number of \$900 places.

The CHAIRMAN. Let me ask Mr. Harrison to explain that.

Mr. HARRISON. As these \$900 places became vacant, during the course of the year the bureau attempted to fill them by the appointment of stenographers. You know what the situation is with reference to stenographers. It was impossible to secure properly qualified persons for less than \$1,200. The only alternative therefore was to leave these statutory places vacant and to employ new people on the lump-sum rolls at \$1,200. You will find in item 16 that 44 clerks at \$1,200 have been transferred to the statutory roll.

Mr. RUBEY. It occurred to me that you could not get along without those places being filled.

Mr. HARRISON. As a matter of fact, we had to increase the number of employees.

The CHAIRMAN. You will find that item 16, on page 30, and item 22, on page 31, really go together. I am very glad you raised that point. All right. Go ahead.

Dr. MOHLER. The first actual increase is included in item 64, on page 34. You will note that last year we had an appropriation of \$628,280, and this year we are asking for \$683,550. This is an apparent increase of \$55,270, but some of these clerks that we have just mentioned will be transferred to the statutory roll; so there is an actual increase of \$66,430. We propose to expend this \$66,430 on tuberculosis work by increasing the number of inspectors by 25, at an average salary of about \$1,500. That will require about \$40,000. Traveling expenses have been estimated at about \$900 for each of these men, making a total of about \$22,500. Then the overhead expenses, together with rental and equipment of two new stations for the tuberculosis control work, will require the balance of the appropriation, \$3,930—making a total of \$66,430 for increasing our tuberculosis-control work.

The CHAIRMAN. Doctor, I think it might be well for you to give the committee somewhat in detail your work with reference to tuberculosis control. I happen to know that it will be a rather lively proposition in this bill.

Dr. MOHLER. You will recall that last year we received our first definite and specific appropriation for tuberculosis eradication. Dur-

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ing the intervening period we have established offices at five different points, one at Richmond, Va., another at Springfield, Mass., a third at Indianapolis, Ind., a fourth at St. Paul, Minn., and a fifth at Lake City, Utah. Now we propose to create two new stations, one at Memphis, Tenn., and the other at Omaha, Nebr., the idea being to have an inspector in charge located at these central offices with a force of men to carry on the work in the adjacent territory. The man at Richmond has now several States, including Virginia, North Carolina, South Carolina, and at the present time Tennessee. As soon as we have the funds, we will open a new station at Memphis, Tenn., and that office will also have charge of Mississippi and some of the other Southern States. The project that we are working on for tuberculosis control covers three distinct items. The first is the control of hog tuberculosis, the second is in establishing tuberculosis-free herds of pure-bred cattle, and the third is tuberculosis eradication from circumscribed areas. We have done very little in the latter line because it requires quarantine measures, and communities are not very eager to accept the circumscribed area project on account of the quarantine feature. The other two lines of work are educational and are entirely voluntary on the part of the people with whom we are cooperating.

I may say that last week at Chicago there was a meeting of well-known breeders, together with some of the State and Federal officials to discuss the feasibility of the accredited tuberculin-tested herd idea, and the result of the discussion was a set of resolutions accepting the idea of the accredited tuberculosis-free herds and requesting that the bureau extend this work as speedily as possible.

The CHAIRMAN. How much have you expended on this work during the current year?

Dr. MOHLER. About \$117,000.

The CHAIRMAN. And you propose to increase that to how much?

Dr. MOHLER. \$66,000 additional.

The CHAIRMAN. Making one hundred and eighty-odd thousand dollars?

Dr. MOHLER. Yes, sir.

The CHAIRMAN. Your work in this regard is largely experimental so far, Doctor?

Dr. MOHLER. More educational than experimental. The experimental features of the work along the first two lines mentioned have been done in the past, and now it is merely a matter of applying the results of experimental investigations to the actual conditions; so that the principal portion of the work on hog tuberculosis and accredited herds is along educational lines.

The CHAIRMAN. My recollection of statements made before the committee last year is to the effect that you might conduct some experiments along the line of absolute eradication within restricted areas to see whether it were possible to work out a plan which might be applied to the Nation as a whole. Have you done anything on that?

Dr. MOHLER. No, sir; that would be the experimental work that we propose to do, but thus far we have found no community that would accept the conditions required. At present the State of Wisconsin is endeavoring to get the consent of 50 per cent of the residents of certain counties. They are starting a petition in Waukesha

County, in Wisconsin, and if they succeed in getting the consent of the majority of the farmers in having the county quarantined we are ready to put our men in there and start the experimental work in the control of tuberculosis in the circumscribed area. The only circumscribed area at the present time in which we have done any work is the District of Columbia. The work was started here some years ago, and the amount of tuberculosis was reduced from 18.7 per cent down to less than 1 per cent at the present time. That is the only circumscribed area where the bureau has done any work in eradication.

Mr. DOOLITTLE. How long have you had that in effect?

Dr. MOHLER. About eight years.

The CHAIRMAN. What I had in mind was this: Of course, you know better than I do that there is a pretty general demand throughout the country for a vigorous campaign against tuberculosis among both cattle and hogs.

Dr. MOHLER. Yes, sir.

The CHAIRMAN. And there are those who feel that the time has now come when we might begin a campaign for absolute eradication, just as we have done with the cattle tick and just as we have done in a lesser way with hog cholera and the foot-and-mouth disease. My recollection is that you were going to expend the money we gave you last year in experimental work to determine whether or not you are ready for that kind of activity. Your statement is that you have undertaken to do some of that, but you do not feel you are quite ready to begin that campaign extensively—both extensively and intensively?

Dr. MOHLER. Yes, sir; that is right. We feel that the amount of success that we will accomplish would be greater along these first two lines mentioned than it would along the third line, which is in more or less of an experimental stage—that is, the eradication from circumscribed areas.

The CHAIRMAN. As a matter of fact, the two lines of educational work will gradually lead to the taking up by the public itself of the other line of work?

Dr. MOHLER. Quite true. That is the reason we prefer to start along these two lines of least resistance rather than the third line, where there is more or less opposition. But if we can get a community of pure-bred cattle breeders in a certain section to allow us to test their herds and place them on this accredited list, that in itself will start a community of free herds which will be enlarged upon and used as a nucleus in extending the work from that particular community.

The CHAIRMAN. Do you happen to have any estimate of the loss of income from tuberculosis in cattle?

Dr. MOHLER. The last estimate of the department indicated that the loss was about \$25,000,000 per annum.

Mr. HARRISON. The success of all these lines of work will later determine whether it is feasible or desirable to undertake general eradication.

Dr. MOHLER. Yes.

Mr. HARRISON. In that sense, therefore, it is really experimental work. I believe that is the thought Mr. Lever had in mind.

The CHAIRMAN. Yes.

Dr. MOHLER. To that extent it is experimental work. We know enough now to realize that we can not go into a community where there is 50 per cent of tuberculosis with any idea of being successful, and that is the reason we are starting in those communities where tuberculosis is rather slight and where the farmer is more likely to accept our methods of control work. Some of these dairy sections where the percentage of tuberculosis is very great have already had the experience of having the tuberculin test applied, with a large percentage of the animals reacting, and they are not in favor of the tuberculin. If we can determine in these other communities a method of control which will be acceptable to the breeders and dairymen, we are going to meet a great deal less opposition when we undertake work in States with a large percentage of tuberculosis.

Mr. RUBEY. What are the States doing along this line?

Dr. MOHLER. The States are doing very little. Pennsylvania, Wisconsin, and Minnesota and one or two others are endeavoring to cope with the situation along the lines of the accredited-herd system. In the last year Mississippi, Utah, and Nebraska have accepted the accredited herd idea of having the pure-bred cattle tuberculin tested. It is just in its incipiency, as it were. As I said, these three States have adopted the regulation within the last 12 months. Minnesota has had the accredited-herd system longer than that.

The CHAIRMAN. Any further questions on that proposition?

Mr. LESHER. In this last year have you had much trouble with hog cholera?

Dr. MOHLER. The loss from hog cholera has been reduced considerably. That will come out in a few moments under the hog-cholera item.

The CHAIRMAN. That leaves you about \$500,000 in this item that you are going to expend for other purposes?

Dr. MOHLER. Yes, sir. That amount is exactly the same as has been allotted in previous years.

The CHAIRMAN. Can you summarize in three or five minutes just how you expect to expend the balance of that fund? It is a large fund and some Member may ask questions about it on the floor of the House.

Dr. MOHLER. The balance of this appropriation will be expended, as in former years, on general field work. That includes our work on cattle scab, sheep scab, live-stock transportation, the inspection of live stock at the public stockyards, the inspection of southern cattle at those yards, and the execution of the 28-hour law. In addition to these, the appropriation includes the establishment and maintenance of quarantine stations and repairs and improvements to the various buildings at the quarantine stations, and the tuberculin and mallein testing of animals. For this tuberculin testing we propose to expend the \$117,000 included in the present year's appropriation, to which I have already referred.

The CHAIRMAN. You can extend your remarks, Doctor, and I wonder if you could not set out just how much is expended under each item?

Dr. MOHLER. I have the figures right here. Of the remainder of this appropriation, amounting to about \$500,000, there is allotted the

sum of \$119,000 to the eradication of scabies of sheep; \$60,000 to the eradication of scabies of cattle and horses throughout the Western States; \$115,000 to the supervision of the interstate transportation of live stock, including the inspection of southern cattle; \$27,000 to the execution of the 28-hour law; \$113,000 to the inspection and quarantine of imported animals, the maintenance of our animal-quarantine stations at Boston, New York, and Baltimore, and the inspection of vessels carrying export animals; and about \$20,000 to the preparation and distribution of blackleg vaccine, tuberculin, and mallein.

Mr. DOOLITTLE. There has been some little controversy between the United States Department of Agriculture—that is, between the Bureau of Animal Industry—and the live stock commissioner of the State of Kansas regarding scab on cattle. Now, I wish you would state from your experience and from your knowledge and the knowledge of other Government officials when it can be definitely determined that scab which was existent in a herd has disappeared.

Dr. MOHLER. Mr. Chairman, I think the incident recited by Mr. Doolittle was with reference to a shipment of cattle that came from Oklahoma to the Wichita stockyards in Kansas. At that point the cattle were found to be infected with scab mites. These animals were dipped once in the Wichita stockyards and were, according to our regulations, to be held for a 10-day period to have the second dipping. Instead of receiving the second dipping, according to the bureau regulations, the live stock commissioner of Kansas allowed these cattle to go out into the State of Kansas, which was perfectly legitimate for him to do. Later on, in August, a request was received to have these cattle move interstate to other sections. Inasmuch as such an interstate movement was contrary to our regulations, the request was not approved, and the statement was made that in order to allow these cattle to go interstate it would be necessary to have the second dipping in accordance with the regulations. The point that Mr. Doolittle has raised refers to the fact that the disease known as mange in cattle can not be detected in the summer time very readily unless it is in a severe form. The animal has to be more or less weakened otherwise as the result of exposure, the lack of food, and the other conditions that obtain in the winter season. So that the examination of a herd of cattle in August and the failure to find scab mites at that time does not mean in any sense of the word that the herd is "free" from the scab mite. We wrote to the Commissioner of Agriculture and stated that we would be very glad to make another examination as soon as the cold weather started, about the first of November, and if at that time the indications of scab were not present we would be very glad to issue an interstate certificate, so that the animals could go without restriction to any of the public markets.

Mr. DOOLITTLE. That matter was finally satisfactorily adjusted?

Dr. MOHLER. Yes; we made an inspection around the 1st of November, and the cattle were not found infested, so they were released.

Mr. DOOLITTLE. I think it ought to go into the record, also, Doctor, what pressure is brought on the Federal Department of Agriculture from other States regarding your action in any particular States with reference to scab.

Dr. MOHLER. All the other States would support an action of that kind for the simple reason that if the Federal Government does not interpose against the shipment of such exposed cattle these other States are going to receive these animals, which start up centers of scab in their States. It might be said that this particular herd came from a notoriously scabby bunch of cattle in Oklahoma.

Mr. DOOLITTLE. Had threats been made by other States that if cattle of this kind were released prior to cool weather a quarantine would be placed against Kansas?

Dr. MOHLER. Yes, sir; that was done in an informal manner and not by correspondence, but we received information informally from other States to the effect that if this condition obtained they would quarantine against the State of Kansas; and they were holding Kansas responsible in a number of other instances occurring during the last 12 months for being the origin of scab that occurred in their own States as the result of certain shipments. In examining cattle for ticks you examine them in warm weather, as the absence of ticks in cold weather does not mean that the pasture of the cattle are free of ticks. On the contrary, the examination for slight cases of cattle mange or scab must be made in the winter time in order to give you any idea of the presence or absence of the scab mite.

Mr. DOOLITTLE. There is this cooperation between the department and the Live Stock Commissioner of the State of Kansas, I understand?

Dr. MOHLER. Yes, sir; there has been cooperation excepting on one or two of these personal requests. This particular herd of cattle belonged to a friend of the commissioner, as you know, and he was trying to give him the benefit of an unrestricted market. Our work in hog cholera is moving along nicely and giving very fine results.

Mr. DOOLITTLE. Yes, indeed, it is.

Dr. MOHLER. But there are certain individual conditions, like the one you mentioned, in which we do not feel like breaking down our regulations for any personal reason, and as you know we did the best we could and about the 1st of November the cattle were released. I may say that the owner of these cattle was very careful in keeping the 324 exposed animals in a pasture by themselves, so as not to expose the other animals. The latter were all released earlier in the season, but these 324 animals were held in the pasture until the cold weather started.

Mr. McLAUGHLIN. They were found not to be infected?

Dr. MOHLER. They were found not to be infected.

The CHAIRMAN. Anything further on that item, gentlemen? Then, Doctor, take up your next, item 65, on page 36, for all necessary expenses for the eradication of southern cattle ticks \$620,420, which is an apparent increase of \$11,140. That is really due to transfers?

Dr. MOHLER. Yes, sir. There is no actual increase in the item for the eradication of southern cattle ticks. The apparent increase is \$11,140, due to the transfer from the lump sum to the statutory roll.

The CHAIRMAN. Briefly, what progress are you making with that work?

Dr. MOHLER. During the past year we have made greater progress than in any previous year. The extent of territory released on the

first day of December amounted to over 65,000 square miles, and for the first time we have reached the Gulf of Mexico, releasing the entire State of Mississippi from Federal quarantine. On the first day of September additional territory, amounting to almost 2,000 square miles, was released.

The CHAIRMAN. How much of the emergency fund have you used in this work?

Dr. MOHLER. The emergency fund, in addition to this regular fund, is \$200,000.

Mr. McLAUGHLIN. How much territory do you cover in an average in a year?

Dr. MOHLER. We are always working ahead of the territory released. In these two periods, September 1 and December 1, there were about 67,000 square miles released. That means that we have put that much clean territory behind us, but we are already in the adjacent ticky territory to an equal extent.

Mr. McLAUGHLIN. I did not mean to ask the extent of territory in which you are working, but from how much territory, each year, on the average, do you eradicate the tick?

Dr. MOHLER. We have averaged about 31,000 square miles per year. This year's clean-up, however, is the largest area that we have ever released at any one time.

Mr. McLAUGHLIN. Two thousand square miles?

Dr. MOHLER. Sixty-five thousand square miles.

Mr. McLAUGHLIN. That was one release?

Dr. MOHLER. Yes, sir; on December 1; and previous to that, on September 1, we had released almost 2,000 square miles.

Mr. McLAUGHLIN. What is your experience as to the territory over which you have passed? Do you find a recurrence of the trouble?

Dr. MOHLER. Very exceptionally. There is some recurrence of the ticks as a result of owners bringing in infested mules—more in the case of horse stock than of cattle stock—but owners appreciate being in a free zone, and as soon as anything like that is found they report either to the county agents or to the Federal or State officials, and the amount of reinfection is very immaterial. In the freed area every stock owner becomes his own inspector.

Mr. McLAUGHLIN. What States have recently entered the lists of those that have State regulations in regard to dipping?

Dr. MOHLER. Mississippi, Louisiana, and Arkansas have State-wide requirements, while the State of Texas has gone into this same line with zones. The State is divided into three zones, one zone coming under the zone-wide eradication in 1919, the second zone in 1920, and the third zone in 1922. There was a representative from Oklahoma here in Washington on Monday, and he requested a copy from me of the Mississippi statute, so that he could endeavor to get the same law for the State of Oklahoma.

Mr. McLAUGHLIN. Have those laws been passed at your suggestion, and do the provisions meet your approval?

Dr. MOHLER. They are not passed at our suggestion, but the ideas are approved by the bureau.

Mr. McLAUGHLIN. Do they go as far as you think they ought to go?

Dr. MOHLER. Yes, sir; that is the sole reason for cleaning up the entire State of Mississippi. Without a State-wide law, we would never have been able to clean up Mississippi in so short a time. They

did not start on this until 18 months ago, and within 18 months they have practically cleaned up the entire State.

Mr. McLAUGHLIN. There are still some States that refuse to enact such laws; or have failed to do so?

Dr. MOHLER. They have failed to enact such laws. I do not know whether they have refused, but they have failed to do so.

Mr. McLAUGHLIN. You have brought it to their attention and suggested it?

Dr. MOHLER. Yes. We published the fact that Mississippi and Louisiana have done so, and our men in the field have been talking to the various people in the infested territories, stating the benefits accruing from State-wide laws. That was the very reason this gentleman from Oklahoma came up this week—to ascertain what the phraseology of such a law should be—and I gave him a copy of the Mississippi law, from the enforcement of which we have had such excellent results.

Mr. McLAUGHLIN. We are asked each year on the floor how long this work will continue; how much longer these appropriations will have to be made. What do you say about that?

Dr. MOHLER. We are expecting to have South Carolina released inside of 12 months, but other States will require more time.

Mr. McLAUGHLIN. Has South Carolina such a law as you speak of?

Dr. MOHLER. No, sir; but we are getting the cooperation without the law. The infested territory in South Carolina is not so extensive and the live stock is not so numerous as in some of these other States, but we feel quite sure that South Carolina will be the next State to be entirely released from the quarantine. Arkansas is also working very strenuously. They have had more territory released this year than any other State except Mississippi.

Mr. DOOLITTLE. You might state right there what States are under the tick quarantine.

Dr. MOHLER. I stated a little while ago that Mississippi, Louisiana, and Arkansas had the State-wide and Texas the zone-wide eradication laws.

Mr. DOOLITTLE. That is not what I mean. What States are under Federal quarantine for ticks?

Dr. MOHLER. Alabama, Florida, Arkansas, Georgia, Louisiana, Virginia, Mississippi, Oklahoma, North and South Carolina, and Texas, either in part or almost entirely so; and I would like to say here that the amount of cooperation that we are getting in these various States is increasing every year. For instance, in Alabama we have over 29 Federal employees, the State has 32, and the counties have 236. That is the kind of cooperation from which we are getting the best results. In Mississippi we had 37 men this past year; the State had 16 men, and the counties furnished 503. That shows that the local people are taking great interest in the work, and they are spending their own money to accomplish these results.

Mr. McLAUGHLIN. Have you said all you are able to say or wish to say that would help us to answer the question that may be asked on the floor as to how long this work will continue?

Dr. MOHLER. We have figured that it will require until 1922 to entirely eradicate the tick. That is purely an approximation.

The CHAIRMAN. Four to six years would be within reason?

Dr. MOHLER. There will be very little tick territory left in 1922. I believe there will be some in Texas, more likely so than in any other State, on account of the large territory, the condition of the lands and the open range, and the difficulty of rounding up and dipping all the cattle. It is absolutely essential that 100 per cent of cattle must be dipped in order to get these results. If you go out, have a roundup, and miss 5 or 10 per cent, it is impossible to clean up ticks, and that is going to be the difficulty in some of the territory in Texas.

Mr. McLAUGHLIN. And as to the finality of the proposition, do you think it will be necessary for you to do it again or to ask for an appropriation for it?

Dr. MOHLER. We hope not. The only thing I can refer you to is the work that has been done in California and Tennessee. Those States were tick infested and they have been cleaned up. We have not gone back to them, and we hope we will not have to. Of course, California is bordering Mexico. Lower California is ticky, and we are anticipating the possibility of ticks being brought across on burros and mustangs from Lower California, but we are watching the situation and we have had no reinfestation.

Mr. McLAUGHLIN. How thoroughly are you watching? What is being done?

Dr. MOHLER. We have inspectors on the line in southern California and we also have a quarantine fence from the Pacific Ocean clear back to Tambo in the mountains. There are certain gates in this mountain fence, and cattle can only come through that particular place, where we have our inspectors.

Mr. McLAUGHLIN. That is only a limited stretch.

Dr. MOHLER. Yes, sir.

Mr. McLAUGHLIN. Texas has a great border on Mexico there. Is that border being watched carefully?

Dr. MOHLER. The border where the ticks are is still under quarantine, and from the quarantine line west is high mountainous territory, where ticks do not live. If they get into that territory, they would not survive; but we have inspectors along the border, and it is one of their duties to inspect for ticks as well as scab, lump jaw, anthrax, and things of that kind.

Mr. McLAUGHLIN. Do you think that work is being done properly and thoroughly?

Dr. MOHLER. Yes, sir. We have every reason for believing that it is being done properly and thoroughly. You know we allow ticky cattle to come from Mexico into Texas south of the quarantine line.

Mr. McLAUGHLIN. For immediate slaughter?

Dr. MOHLER. No, sir; for any purpose. Mr. Burleson got such an act passed when he was a Member of Congress.

Mr. McLAUGHLIN. Are there any bad results from that?

Dr. MOHLER. No; because they are coming into a ticky country.

Mr. DOOLITTLE. If you got Texas rid of ticks, the law would have to be changed?

Dr. MOHLER. Yes, sir; to protect the balance of the country.

Mr. RUBEY. What has been done about the enforcement of the provisions which allow cattle to be shipped in from Central and South America?

Dr. MOHLER. Everything has been provided for. We have our regulations and two permits, I believe, have been issued for bringing in cattle to the port of Jacksonville, Fla., but thus far the importers have been unable to get the bottoms to carry the cattle. Furthermore, since that law became effective on August 10, 1917, the price of cattle in Guatemala and Honduras and those other Central American points has gone up remarkably, so that the inducement to import these cattle is not the same as it was before permission to import them was granted. These Central American people have gotten wise to the proposition that it is possible for them to sell their cattle to the United States, and the prices have gone up accordingly.

Mr. RUBEY. So that there is really nothing brought in under the law?

Dr. MOHLER. No, sir. Two permits have been issued to the Armour Packing Co., which has an abattoir at Jacksonville, Fla., and they have facilities for unloading the cattle right on their premises from the boat through the chutes. And these cattle will not come in contact with cattle in Florida.

Mr. RUBEY. They will be immediately slaughtered?

Dr. MOHLER. They will be immediately slaughtered.

Mr. RUBEY. And so far none have come?

Dr. MOHLER. None at all.

The CHAIRMAN. I notice you have changed the language in line 4 there, striking out the words "in areas freed of ticks" in connection with the expenditure of \$50,000 for live stock and dairy demonstrations.

Dr. MOHLER. Mr. Chairman, the bureau desires to have that phrase stricken out in order to allow the men working north of the line to do some work south of the line. It is purely a technical change. The particular point that came up was in North Carolina recently, where the experiment station folks wanted our men to work south as well as north of the line. We thought it was absolutely necessary to comply with the requirements of the act, so we could not furnish the assistance which North Carolina desired. It seems to me in the work we are doing in increasing production and bettering the quality of live stock directly north of the line that we could go south of the line and get the same result without any trouble and without any greater expense. It is a saving of funds as well, but under the present phraseology no such work is permitted.

Mr. RUBEY. If those words were eliminated, that might permit them to go, if they should want to, way down into the tick country.

Dr. MOHLER. That would be a question of administration, and we would not permit that. What we want to do is to work on both sides of the line. It is really an imaginary and changeable line, as is indicated by this order of September 1 and then of December 1 releasing free territory. If we had this phrase eliminated, our men could be working ahead of the release, and very often they might have meetings in certain townships and villages that are south of the line to-day which in two weeks would be north of the line.

Mr. DOOLITTLE. What was the purpose of putting in the words in the first place; do you know?

Dr. MOHLER. Merely to encourage the farmers in the freed area to improve their breeds of stock and grow more forage and different kinds of forage; also to stimulate and encourage live-stock production after the ticks have been eradicated. We feel, however, that there is some preliminary work that should be done by these same men south of this line.

Mr. RUBEX. Especially in that territory that is about ready to be released?

Dr. MOHLER. Yes, sir; but I can assure you that there will be no endeavor on our part to put these men away down in the territory that is infested.

Mr. DOOLITTLE. As a matter of fact, this freed line moves all the time, does it not?

Dr. MOHLER. Yes, sir; from September 1 to December 1, in three months it moved 65,000 square miles farther South.

Mr. DOOLITTLE. But, as a matter of fact, it has been moving along practically every day?

Dr. MOHLER. Yes, sir.

Mr. McLAUGHLIN. The presence of those words "and dairy demonstration work" would permit of a lot of work being done that would seem to me to be outside of the work of eradicating ticks. I would like to know what part of your work is dairy-demonstration work and how much of that money you are using in dairy-demonstration work, and how much in what I conceive to be the regular work of eradicating ticks?

Dr. MOHLER. We are merely using \$50,000 for this line of work—in addition to the regular tick-eradication work—and we divide that \$50,000 equally between the Animal Husbandry Division for live-stock production and the Dairy Division for dairy-demonstration work.

Mr. McLAUGHLIN. Of course, that is all good work; but there are other branches that are doing this dairy-demonstration work and there might be a duplication there. How much of it are you doing?

Dr. MOHLER. As I say, only \$25,000 of this money is given to Mr. Rawl to stimulate an interest in dairying in this tick-freed area solely.

Mr. McLAUGHLIN. That is to supplement the appropriation that is devoted particularly to demonstration purposes?

Dr. MOHLER. Yes, sir; it supplements the dairy appropriation.

Mr. McLAUGHLIN. Then you are not doing anything independent of that branch of the department which is doing actual demonstration work as a single proposition?

Dr. MOHLER. No, sir.

Mr. McLAUGHLIN. What kind of dairy-demonstration work is done with your money?

Dr. MOHLER. If you will permit, Mr. Rawl can tell you that in a few minutes.

The CHAIRMAN. The next item is the regular dairy item.

Mr. McLAUGHLIN. All right.

The CHAIRMAN. Is there anything further on the tick-eradication proposition?

Mr. McLAUGHLIN. I want to emphasize, and I think it is a fact, that you are not doing anything yourself in the dairy-demonstration

work. You are simply letting those who are engaged in that big branch of the work take a part of your money.

Dr. MOHLER. The Dairy Division is doing that entirely under the bureau.

Mr. McLAUGHLIN. There is no duplication of work?

Dr. MOHLER. None at all. It is merely an additional feature which they are doing in the area right north of the quarantine line at the present time.

The CHAIRMAN. Would there be any objection to taking this \$50,000 and adding it over here, \$25,000 to your dairy work and \$25,000 to the animal-husbandry work?

Dr. MOHLER. I see no objection in the world.

The CHAIRMAN. I wish you would keep that in mind, Mr. McLaughlin. I think I understand it myself, but it causes confusion.

Mr. McLAUGHLIN. I think that is a better arrangement, as you suggest.

Dr. MOHLER. The bureau has allotted \$25,000 to Mr. Rawl and \$25,000 to Mr. Rommel to augment their animal husbandry and dairy work.

Mr. HARRISON. These divisions are spending this money along with their other appropriations. The separate appropriations merely make extra bookkeeping, that is all.

The CHAIRMAN. I think it should be done. Mr. Clerk, I wish you would make a note of that, to add \$25,000 of that fund to the animal-husbandry item and \$25,000 to the dairy item and cut out that language in item 65 that refers to this work.

Mr. McLAUGHLIN. And reduce this item by \$50,000.

The CHAIRMAN. Yes; reduce the amount by \$50,000. Take up the next item, No. 66, for all necessary expenses for investigations and experiments in dairy industry, etc. There seems to be an apparent decrease of \$14,540, but that is due to transfers?

Dr. MOHLER. Entirely.

The CHAIRMAN. These transfers, you said in the beginning, were all at the same salaries?

Dr. MOHLER. Yes, sir; all at the same salaries.

The CHAIRMAN. Do you desire to present very briefly the lines of work you are conducting under this item, or would you rather have Mr. Rawl do that?

Dr. MOHLER. I think Mr. Rawl had better do that.

STATEMENT OF MR. B. H. RAWL, CHIEF OF THE DAIRY DIVISION, BUREAU OF ANIMAL INDUSTRY, UNITED STATES DEPARTMENT OF AGRICULTURE.

Mr. RAWL. Our effort has been to center the work so far as possible along lines that will give most immediate results.

Regarding the transfer of funds from the general-expense item to the statutory roll for clerical help, I wish to explain that this really constitutes an actual decrease in the general-expense funds, since we have been compelled to take general-expense funds to pay for the clerical help. This has been necessary because we have been unable to

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obtain such assistance at the salaries provided for the statutory positions assigned to the dairy division. This, therefore, has resulted in an actual reduction of our general-expense funds for dairy work.

Regarding the \$50,000 in the tick-eradication item for the purpose of live stock and dairy demonstrations, half of it is used for dairy work which is done by the regular dairy division forces. This work is similar to the dairy work done in other sections except that it is more concentrated. It has been quite fruitful in developing dairying in the territory that has been freed of the cattle tick.

There are no increases at all for dairy work, and I do not know to what extent you would like to have that work discussed.

The CHAIRMAN. I would like for you, Mr. Rawl, either now or when you correct your notes, to set out briefly the different lines of work you are doing and how much money you are expending under each, but at this time, if you have made any special discoveries, or if you have accomplished anything during the past year regarding which you think the committee would be particularly interested in having information, I think it would be well for you to state that; and if you propose to undertake any new work during the coming year, state that, too.

Mr. RAWL. This emergency has accentuated in some respects the importance of some of the regular lines of work. In some sections there has been some reduction in the number of dairy cattle.

Mr. McLAUGHLIN. We know that that has occurred and the reason for it. Is it very extensive?

Mr. RAWL. No, sir; except in restricted localities. There are restricted communities in which it has become serious. In general, it has done this: You know that for years we have been trying to create an interest in the elimination of the inferior cattle. The high price of feed and in some cases the scarcity of labor has accentuated the need for this more than anything in recent years, and recently there has been more culling than usual. Of course, here and there a complete herd has been sold.

Mr. McLAUGHLIN. Under normal conditions that would be right, but do you think that possibly at this time there has been too much of it?

Mr. RAWL. In localities, I think there has been too much of it, although you can hardly say, if a man's labor situation is such that he can not take care of his cattle, that he should keep them; but what we have been urging the farmers to do is to eliminate their inferior animals and to keep their better ones. One reason for this is that we believe there is going to be a great demand for high-grade dairy cattle. The supply is being reduced all over the world, and we believe that the owners of good cattle, particularly pure-bred cattle of good quality, not only in this country but in other countries as well, know that their cattle are going to be of great value at the close of the war.

Mr. DOOLITTLE. They are of great value now.

Mr. RAWL. They are, and they are increasing in value. That, too, has emphasized the importance of the club work that we are doing. This chart [exhibiting] will indicate the progress and value of that work.

(The chart referred to follows:)

Cooperative cow-testing associations in operation in the United States as July 1 of each year for the past 12 years.

State	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917
Michigan	1	4	2	5	4	3	4	4	3	1	21	25
Maine			1	4	1	1	1	1	1	1	11	5
New York			1	1	3	3	18	11	13	25	45	45
Vermont				2	9	11	11	11	20	11	28	45
Iowa				2	3	4	4	4	3	11	11	30
Calif. reg.				1	3	2	4	4	3	1	4	15
Wisconsin				9	11	11	9	11	28	17	31	31
Nebraska				1				1	1	1	4	4
C. Idaho					1	1	2	1	1			3
Pennsylvania					1	1	2	1	1	14	11	20
Ore.					1			1	4	1	10	10
Washington					1	3	1			1	11	14
Maryland						1	1	3	1	1	4	9
Illinois						4	1	3	1	1	1	11
Minnesota						3	1	11	9	11	11	21
New Hampshire						1	1	1	4	1	11	11
Oreg. n.						1	1	1	1	1	15	11
Utah						1			1	1		1
Massachusetts						1	1	1	3		4	4
Virginia						2	2	2			2	4
Kansas								1	1	1	1	4
Indiana								1	1	1	1	3
Kentucky								1	1		1	1
Missouri									2	1	1	3
New Jersey									2	1	4	5
West Virginia									1	1	1	1
C. Connecticut									1	1	1	3
North Carolina									2			
Louisiana									1			
South Dakota									1	1	1	3
Nevada										1		1
Arizona											2	2
Rhode Island											2	2
Delaware											2	3
Idaho											2	1
Mississippi											1	
Alabama											1	1
Tennessee											1	3
New Mexico												1
Wyoming												1
Total	1	4	4	25	40	44	52	100	163	211	346	459

This table shows the active cow-testing associations to be 459 at the present time, and are scattered over practically the whole Nation. You see how they are growing. The States are cooperating with us fully in this work. The idea is for the community to get together and work as a unit on a system of eliminating these inferior cows and taking better care of the good ones. We think that this is more vital now than in peace times.

This 'exhibiting' is a similar chart showing the bull clubs. The herds that are big enough to be included in the cow-testing associations contain perhaps not more than 4,000,000 out of 22,000,000 dairy cows in the Nation. The others are in herds too small for cow-testing associations but not too small for the bull clubs.

(The chart referred to follows:)

Cooperative dairy bull associations in operation in the United States on July 1 of each year for the past 10 years.

State.	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917
Michigan.....	8	7	8	9	7	8	9	8	8	8
Minnesota.....		1	1	1	1	2	2	2	3	3
Maryland.....				1	1	1	1	1	1	1
North Dakota.....					2	1	1	1	1	1
Vermont.....							1	1	1	1
Oregon.....								1	2	2
Wisconsin.....								1	1	1
Illinois.....									1	1
Iowa.....									1	1
Massachusetts.....									1	1
North Carolina.....									1	4
South Carolina.....									3	9
Pennsylvania.....										2
Mississippi.....										1
Total.....	8	8	9	11	11	12	14	15	24	36

This table [exhibiting another chart] shows the records of the daughters of certain bulls that have been used in the bull clubs as well as the records of the dams of the daughters.

(The table referred to follows:)

Daughters of association bulls compared with their dams.

		Average fat production.	
		1916.	1917.
Bull No. 1:			
Daughters—			
7 producing.....		270.5	
6 producing.....			248.8
Dams—			
7 producing.....		208.3	
6 producing.....			209.8
Average increase.....		62.2	39.0
Bull No. 2:			
Daughters—			
7 producing.....		281.6	
5 producing.....			305.8
Dams—			
7 producing.....		226.4	
5 producing.....			250.0
Average increase.....		55.2	55.8
Bull No. 3:			
Daughters—			
2 producing.....		369.5	
6 producing.....			848.0
Dams—			
2 producing.....		254.0	
6 producing.....			254.2
Average increase.....		115.5	93.8

The daughters of bull No. 1 produced, on an average, 62 pounds of fat more than their dams in 1916 and 39 pounds more in 1917.

The daughters of bull No. 2 produced 55 pounds more than their dams in 1916 and 55 pounds more in 1917.

The daughters of bull No. 3 produced 115 pounds more than their dams in 1916 and 93 pounds more in 1917.

When it is stated that there are at least 15,000,000 dairy cows in the United States that, with the proper breeding, could be replaced with daughters as much superior to them as the daughters mentioned above are superior to their dams, we realize the possibilities of the bull-club movement as a means of greatly increasing the efficiency of our dairy farming.

Here another chart was shown, but the data contained on it are given in the following statement:

COW-TESTING ASSOCIATION COWS COMPARED WITH THE AVERAGE

The average dairy cow in the United States returns \$20 more than the cost of feed.

The average cow-testing association cow of the United States returns 50¢ more than the cost of feed.

Dairy cows of the United States average 140 pounds of milkfat per year. Association records for such cows show that the income over the cost of feed is \$20, while the average income over the cost of feed of all the cows in the association studied is \$45.

Mr. DOOLEY. You mean \$20 a year profit?

Mr. RAWL. A \$20 return over the cost of feed. This represents the industry in America—of the fine herds which you find around the cities, but the whole 25,000,000 cows in the Nation.

Mr. McLAUGHLIN. The average return of each cow is \$20 a year?

Mr. RAWL. About that. That is the best estimate we can make.

Mr. DOOLEY. You only figure in the cost of feed?

Mr. RAWL. Only the cost of feed. For the cows in these 150 associations, aggregating 250,000 in number, there is a margin of \$45 per head above the cost of feed.

Mr. DOOLEY. Just state what it is.

Mr. RAWL. It is \$45 for the cows in the associations as against \$20 for all the other dairy cows in the country.

Mr. McLAUGHLIN. Would it not be helpful if you would read into the record that fact?

Mr. RAWL. The data referred to are as follows: The dairy cows of the United States average 140 pounds of milkfat per year. Association records show that for such a cow the income over cost of feed is \$20, while the average income over cost of feed for all cows in all the associations is \$45.

The charts showing this have been made to put on exhibition at certain meetings. In fact, they were made for the national dairy show, but they present the situation so clearly that I thought they might be interesting to you.

Mr. McLAUGHLIN. What kind of literature are you issuing for general distribution as the result of this work?

Mr. RAWL. We are issuing various kinds. We are getting it out in circulars and in charts. These charts were made for that purpose.

Mr. McLAUGHLIN. How large in issue have you of these?

Mr. RAWL. We have not published these charts for distribution. They were distributed at the national dairy show. In various ways we are getting a large amount of publicity on this work. The most effective way, however, probably comes through the extension workers. Through our national and local men we get this information into the hands of the county agents themselves.

I do not want to take up too much time. Here [exhibiting] is a little chart which shows the comparative value of different cows.

Mr. McLAUGHLIN. I think we have time enough for you to explain that fully.

(The chart referred to contained the following information:)

PRODUCTIVE COWS. PROFITABLE.

(Data compiled from 10 cow-testing associations.)

One hundred and fifty pounds of butter fat brought \$18 income over cost of feed.

Three hundred pounds of butter fat brought \$56 income over cost of feed.

Four hundred and fifty pounds of butter fat brought \$108 income over cost of feed.

As production doubled income over cost of feed increased three times.

As production trebled income over cost of feed increased six times.

Mr. RAWL. The 150-pound cow can produce \$18 income over cost of feed. The 300-pound cow can produce \$56 over cost of feed. The 450-pound cow can produce \$108 over cost of feed. The average production of the Nation is about 160 pounds; hence the average dairy cow in the Nation returns about \$20 more than the cost of the feed, as was shown above. When the production is doubled, the income over cost of feed is increased three times. No ordinary person can afford to be in the business with cows that produce below 300 pounds. We ought to be able to double the production of the dairies of this Nation if we can put the bull club and the cow-testing association in every neighborhood.

Mr. McLAUGHLIN. No one should keep a cow that produces less than 300 pounds of butter fat a year?

Mr. RAWL. I want to qualify that a bit. I mean after one is under way and has had a chance. A great many dairies have begun with inferior cattle. We can not condemn that when it is necessary. When a person has had an opportunity to get the business under way for a time there is no reason to maintain a herd that is below this with proper breeding and selection.

Mr. McLAUGHLIN. And the next is what?

Mr. RAWL. The next shows the return over cost of feed by the cow that produces 450 pounds of fat. There are several herds now in the hands of skillful men that will average as high as 450 pounds.

Mr. McLAUGHLIN. If they can reach an annual production per cow of 450 pounds of butter fat, the average income expected will be \$108 per year per cow?

Mr. RAWL. That is, on the butter basis, where usually the least amount is returned, it is \$108 after the cost of feed has been taken out.

When a reduction of animals is necessary we hope that such reductions will be made in the cow-testing association system so as to decrease the quantity of milk as little as possible.

The CHAIRMAN. Do you happen to know what has been the reduction in the dairy herds of the country?

Mr. RAWL. We have not been able to determine.

Mr. DOOLITTLE. Most of these places are where there has been a partial failure in forage crops or something of that sort?

Mr. RAWL. Yes, sir. New England, of course, buys a great deal of grain. The price of grain advanced rapidly and there has been some

discouragement. Their prices for dairy products have since advanced, and I hope the situation in New England is satisfactory at this time.

Mr. McLAUGHLIN. If a bulletin is issued, containing the information on these charts, those parallel lines would appear, would they not?

Mr. RAWL. Yes, sir. If that chart were included, a drawing would be made.

Mr. DOOLITTLE. Are you going to put those into the form of a bulletin?

Mr. RAWL. Probably so. We are using them in various ways and we probably shall put them into the form of a bulletin.

The CHAIRMAN. Just briefly describe your other lines of work.

Mr. RAWL. The lines that I have been discussing we generally speak of as production work. Another branch we term manufacturing work, and this has been progressing satisfactorily. In this work aid is given in the application of new methods, those that have been developed in our own laboratories and useful ones developed elsewhere. Under this section several lines of emergency work have been conducted which will come up at some future time. The work of this section was diverted somewhat to give particular attention to the utilization of by-products. There is nothing special that I can speak of unless I go into a detailed discussion of that work. The total amount available for this section for the present year is about \$88,525.

I may say, as a matter of interest, that there are about 30 cheese factories in operation now in the southern mountains, and it looks as though we shall have a real cheese industry in that territory before long. The region of which I speak includes mountainous West Virginia, Virginia, North Carolina, South Carolina, Tennessee, and Georgia. It is very nice to realize that these people, some of them away back from the railroad, are establishing a business of that sort. I never want to omit the statement that this work is all done in cooperation with the States. Similar results have been obtained in the Western States, where we hope to encourage the cheese industry in the mountain valleys of that region, and it is interesting to note that within the last few months the first carload of cheese from Idaho "topped" the New York market for the first time, showing the possibility of that region shipping cheese to the eastern markets.

Mr. McLAUGHLIN. Are you encouraging and assisting in the organization of creameries?

Mr. RAWL. Yes, sir; where it is advisable. Sometimes we have to work as hard to prevent them as to encourage them, but where the conditions are satisfactory, if the community is in need of creameries, we try to give them all the aid we can, particularly the cooperative creameries.

Mr. RUBEN. Have you attempted any of that kind of work in the Ozarks of Missouri?

Mr. RAWL. Not much.

Mr. RUBEN. There is a fine field there.

Mr. RAWL. There is a fine field there, but we have not done so much work in Missouri. You have a big dairy department at your university. It calls on us sometimes for aid which we have supplied when

we could. At the present time it is asking for some active cooperation, but I do not know that we have the facilities to supply it now. I may say with regard to the butter business at the present time that the utilization of whole milk as such is the most economical way, of course, for milk to be used. The next most economical way is in the manufacture of cheese. The creameries, therefore, are finding their competition rather keen at present, and their plan should be to hold their own rather than to attempt to grow in localities where the milk can be used as market milk or manufactured into cheese. We are encouraging the utilization of whole milk, skimmed milk, condensed milk, and condensed skimmed milk in every way possible.

Mr. McLAUGHLIN. The thing that threatens the creameries now is the condensed-milk factory.

Mr. RAWL. Yes.

Mr. McLAUGHLIN. These factories are paying a little more for their milk than the creameries have been paying. There is a market for condensed milk. It is shipped abroad to the armies, and they are paying so much for the milk in some instances that the creameries find it hard to continue in business. The danger is that when this war emergency is past the condensed-milk factories will not operate or many of them will not pay as much for milk as at the present time, and the creameries will have become so embarrassed that they will have quit the business, and then the work of reorganizing the creameries will have to be taken up again. Have you found that condition?

Mr. RAWL. Yes. Wherever it is practicable we have suggested that the creameries, particularly the cooperative ones, sell their milk to the condenseries and in this way hold their organizations together and reserve profit enough to pay the interest on their plants and keep them intact so that they can be operated again when needed.

Mr. McLAUGHLIN. Has that been done in some cases?

Mr. RAWL. Yes.

Mr. McLAUGHLIN. To how large an extent has that been followed?

Mr. RAWL. I can not say. Since the beginning of the war condensed-milk exports have increased from 18,000,000 to approximately 260,000,000 pounds. Just what you say is liable to happen in some places at the close of the war. We can not oppose condensing because that is often the best way to use the milk, but we have done whatever we could to prevent the creameries from going into the trash heap as a result of the rapid increase in the number of condenseries, feeling that the latter are to some extent temporary.

Mr. McLAUGHLIN. There is another thing that has come to my attention. The revenue laws are very severe. The penalties imposed for too large a percentage of moisture in butter are very heavy. I know of a case where a creamery had been operating a long time. I think it was one which was encouraged or helped by your bureau. At one time some of their butter was found to contain too much moisture, and its officers were notified that they were fined 10 cents a pound for 180 pounds of that butter and a \$900 fine besides, making altogether a \$918 fine. It was a creamery that I know has been doing good work for years. The manager of it wrote me and gave me a plausible excuse for the trouble. The question is, will it satisfy the Commissioner of Internal Revenue and will he relieve that creamery from that very large fine? If he does not, the danger

is that the creamery will have to go out of business altogether. I was wondering whether, especially in those cases where the creamery is encouraged and assisted to organize, it would not be outside of your line to try to protect them?

Mr. RAWL. We do.

Mr. McLAUGHLIN. You may say, "Well, if they violate the law, we have no sympathy for them."

Mr. RAWL. No, sir; we do as much as we possibly can.

Mr. McLAUGHLIN. Accidents happen. I am satisfied that an accident happened in this case; at least, I think so; and to let a hard-hearted official of the Bureau of the Internal Revenue put one of your creameries out of existence—I felt that you might be interested in trying to help them.

Mr. RAWL. We have warned them hundreds of times that it may be almost destructive to the small creamery to violate the 16 per cent moisture regulation. Nobody, without testing every churning, can make butter and be sure it is within the law; and a good many creameries have failed to do this, notwithstanding their frequent warning. Numbers of creameries whose owners are perfectly honest and straightforward have been caught through negligence of this kind, though the law has been in effect for a good many years. Anything we can do to induce all creameries to use reliable methods we are glad to do.

There is available for the research laboratories of this division \$68,575. The bulk of the investigations under way relate directly to food problems; hence many of the lines have not been changed. In some cases changes have been made so as to develop certain particular problems that are of immediate importance. On the whole, the work includes investigations of the manufacture and handling of commercialized cream, changes in butter which occur in the various stages of manufacture, transportation, and handling; milk-condensing investigations; study of the bacteriology of milk; investigation of the physiology of milk secretion, which relates to the determination of what enables one animal to produce more than another; the utilization of creamery and cheese factory by-products; manufacture of Swiss cheese, soft cheese, Cheddar cheese; and the investigations in the feeding of dairy cattle.

The market milk section of the division has for its current year's funds \$53,540, for general work with market milk, largely educational in character. This is used in cooperating with various cities in instituting improved methods of milk control. In this work an effort is made to teach the farmer the methods necessary in order for him to meet sanitary requirements.

The dairy work carried on at the Beltsville experiment farm amounts to \$17,300. This work includes an investigation of the problems of breeding, feeding, and housing and care of dairy cattle, and other important lines of investigation which are in progress.

In addition to the projects already mentioned, \$15,000 is being used for the improvement of dairy products that are produced and consumed on the farm, largely devoted to the making of soft cheese. Thirty-five hundred dollars is used in cooperating with the Pennsylvania Experiment Station in conducting experiments in the metabolism in dairy cows.

This makes the aggregate funds of the Dairy Division available for the current year \$378,930. No increase has been requested, and it is intended to carry the work forward about as outlined, keeping in mind at all times that these special projects are of immediate value. The \$25,000 provided for dairy work under the tick eradication item is not contained in the above total.

The CHAIRMAN. Are there any further questions, gentlemen? If not, we are very much obliged to you, Mr. Rawl.

STATEMENT OF DR. JOHN B. MOHLER, CHIEF OF THE BUREAU OF ANIMAL INDUSTRY, UNITED STATES DEPARTMENT OF AGRICULTURE—Continued.

The CHAIRMAN. The next item is No. 67, on page 39, where there seems to be some increase.

Dr. MOHLER. There is an apparent increase of \$31,100, but the real increase is \$63,140, because we have transferred \$17,040 worth of salaries to the statutory roll and are asking for the omission of the necessity of purchasing the lands adjacent to the Morgan horse farm, which last year called for \$15,000, and which has been complied with. So there is an actual increase of \$63,140. The idea is that this amount of money will be divided among the following five projects:

One will include an increase of \$15,000 for the military-horse breeding work. At the present time we have 37 stallions, located at Front Royal, Va., at the Morgan farm in Vermont, and in Kentucky, and we need this extra money in order to pay for the increased cost of feed and help. We have also received several offers since the war began of additional stallions, but it is impossible to accept these animals on account of not having funds sufficient to take care of them. However, with this appropriation of \$15,000 in addition to what we already have we believe we can take care of what we have in the way of stallions, as well as several additional ones.

The CHAIRMAN. How many additional?

Dr. MOHLER. We have had offers of two additional stallions thus far. There have been several visitors talking of offering others, but we have two bona fide offers so far.

The CHAIRMAN. What is the average cost of keeping one of these stallions?

Dr. MOHLER. There is an appropriation of about \$22,000 for the 37 stallions, which gives an average annual expense for feed and care of almost \$600 per animal.

The CHAIRMAN. The larger part of the \$15,000 increase, I assume, goes to meet the increased cost of maintenance?

Dr. MOHLER. Yes, sir; for the feed and care of those that we already have in our possession.

The CHAIRMAN. Feed has gone up?

Dr. MOHLER. Yes, sir; both feed and labor.

Mr. McLAUGHLIN. I see you propose to strike out the words between brackets "and \$15,000 for the purchase of lands in the vicinity of the Morgan horse farm, near Middlebury, Vermont." Those words were not in the bill as it passed the House. I assume they were added in the Senate and that land has been purchased?

The CHAIRMAN. Yes.

Dr. MOHLER. That is true; and we now ask to have that item eliminated.

The CHAIRMAN. Take up the next, \$17,940 for poultry-club work.

Dr. MOHLER. This additional appropriation for poultry-club work will be for the purpose of extending to other States the work that is already in existence in a number of States. We have an appropriation of about \$21,000 already for this work, but we would like to extend the campaign of increased poultry production to a number of other States in cooperation with the extension agencies in these additional States.

The CHAIRMAN. What States have this work already?

Dr. MOHLER. They are Virginia, Kentucky, Tennessee, North and South Carolina, Georgia, Massachusetts, Kansas, Oklahoma, and Washington.

Mr. McLAUGHLIN. And the names of the States into which you wish to carry the work?

Dr. MOHLER. Florida, Arkansas, New Mexico, Oregon, Nebraska, Wisconsin, Indiana, and Connecticut.

The CHAIRMAN. The committee understands the general plan and purpose of this poultry-club work, I think, Doctor.

Dr. MOHLER. We merely wish to extend that work to other States which have requested our cooperation along this line.

Mr. McLAUGHLIN. Is that work done largely in cooperation with or through the regular county agents?

Dr. MOHLER. Yes, sir; very largely. We are furnishing specialists to organize, supervise, and guide them properly along the specific lines of poultry work, and we are cooperating closely with the county agents in the States where we have this work started.

The CHAIRMAN. You really supervise?

Dr. MOHLER. Yes, sir. Our specialists supervise the work to see that it is conducted in the proper way.

Mr. McLAUGHLIN. How many of these specialists are employed?

Dr. MOHLER. We have one in each of the 10 States mentioned.

Mr. McLAUGHLIN. Do you expect soon or ultimately that the county agents will be able to do that work without the advice or assistance of a specialist employed by your bureau?

Dr. MOHLER. I doubt that somewhat, on account of the great amount of work the county agents already have to perform along the general lines of agriculture. These specific lines of work, like dairying and animal husbandry, require special training.

Mr. McLAUGHLIN. Then you think this is likely to be a continuing appropriation?

Dr. MOHLER. Yes, sir; I believe it will be a continuing appropriation until we reach the point where we have enough poultry and enough eggs to warrant the omission of the appropriation. I do not believe the county agents, as a rule, will be able to take up all of this work in addition to their other duties.

Mr. McLAUGHLIN. In some of the States there is a man who has charge of the boys' clubs, and I know that these men in some places are interesting the young folks in the raising of poultry. Are you cooperating with them?

Dr. MOHLER. Yes; we are. We are not cooperating in all the States thus far, but we are cooperating with about 10 States at the present time.

Mr. McLAUGHLIN. Why I speak of this cooperation with the county agents is that it has seemed to me that some of the work which some of your men have been doing is the very work that the county agents ought to be able to do and ought to do, and the idea of having county agents is that that kind of work will be done. Of course, where specialists are required you can not expect the county agents to do it all, but there is a lot of the work that it has seemed to me could be done by the county agents; and if we go far enough and supply money for a county agent for every county in the United States, we have gone a long way and it will involve large appropriations, so that work that can be done by these county agents ought to be done by them and left to them, it seems to me.

Dr. MOHLER. You understand that the men doing this poultry-club work do not take the place of the county agents at all. We only have one or two men in any State, and they are using their specific knowledge to get the county agents interested in bringing these boys together. Their work is purely supervisory, in helping to organize and guide these clubs in close cooperation with the State extension forces.

Mr. McLAUGHLIN. But if it is left to the county agent to get the boys together and effect the organization, they ought to know enough to do it without being urged by your specialists. If they have to do the work finally, why not have them have initiative enough to take it up themselves?

Dr. MOHLER. The only reason is that the amount of work the county agent has to perform at present is so great that anything special you put upon him releases him from general lines of agriculture which he is better able to perform.

Mr. McLAUGHLIN. But you say he merely suggests the work.

Dr. MOHLER. Every county agent does not have these boy or girl clubs under his control. These specialists in poultry-club work merely arouse interest, and they may be working in 30 or 40 counties.

Mr. HARRISON. May I not say that all this work is very closely coordinated with the extension activities. For instance, the Animal Husbandry Division has a cooperative agreement with the States Relations Service which provides for the conduct of all the extension work in animal husbandry through the extension division in the State. The animal-husbandry specialist furnishes the technical information and supplements the efforts of the county agent. Definite project agreements are entered into between the States authorities, the States Relations Service, and the Bureau of Animal Industry to cover the activities in each State. The same procedure is followed in other divisions of the Bureau of Animal Industry and in other branches of the department. The county agents can not be experts in every phase of agriculture and they must have the support and assistance of the specialists of the department and of the colleges.

The CHAIRMAN. These specialists that you speak of really furnish the contact between the Department of Agriculture and the men in the field?

Mr. HARRISON. Yes, sir. They carry the results of the department's investigations to the county agents and to the people in the States. The specialists in the colleges are doing the same thing. There is no duplication of work whatever.

Dr. MOHLER. Mr. Chairman, exactly the same thing obtains with reference to the increase asked for pig-club work.

The CHAIRMAN. Take up your farm-sheep investigations, \$5,600. I think that comes next.

Mr. McLAUGHLIN. The money for that Idaho station was refused last year, was it not?

Mr. HARRISON. The sum of \$12,280 was inserted by the Senate for the equipment of a sheep experiment station in Idaho. That is covered in the third proviso under this general item for animal-husbandry investigations.

Dr. MOHLER. We have asked for a reduction of the amount in that particular item, but the next item is \$5,600 for farm-sheep investigations, which investigations are at the present time being conducted at the bureau's experiment farm at Beltsville and at our farm in Vermont. The Animal Husbandry Division has charge of this particular line of investigations, and they are experimenting with different breeds of sheep and different feeds for the sheep and are studying the quality of the staple of the fleece produced by the different breeds.

The CHAIRMAN. Your next is \$14,000 for farm-sheep demonstrations?

Dr. MOHLER. This appropriation of \$14,000 for farm-sheep demonstration is needed in order to carry out to the various States the same kind of information that Mr. Harrison spoke of. We are at present working in some of the Eastern and Southern States, including Vermont, New York, West Virginia, North Carolina, Texas, and Michigan, and we are anxious to extend this work to additional States. There is a great demand at the present time for information about increasing farm sheep on eastern and southern farms, and with this amount of money we feel that we can put more men in the field to encourage farmers to place an additional number of sheep on these farms in the East and the South.

The CHAIRMAN. I was very much interested in a visit from a gentleman the other day, from the West. He is now working on a plan to induce the large sheep owners of the West to take their sheep into the cut-over land of the South—Mississippi, Louisiana, Georgia, and South Carolina—and I think he has perfected an arrangement by which the owners of this cut-over land will give him free grazing for three or four months in the year. Do you know anything about that?

Dr. MOHLER. Yes, sir. That is true, and it also applies to the cut-over lands in upper Wisconsin and the northern peninsula of Michigan. The landowners are endeavoring to make it desirable for sheepmen to bring ewes from Montana, Idaho, and Wyoming to the cut-over lands in the North as well as the South.

The CHAIRMAN. He made the statement to me that the annual demand for wool is something like 600,000,000 pounds, and that the production this year will amount to only 200,000,000 pounds. I believe those are the correct figures.

Dr. MOHLER. That is about correct; less than half. We import about half of our consumption of wool under normal conditions, and during the war we can not get anything like that amount.

The CHAIRMAN. He stated also that the most vital consideration was with reference to the wool rather than the meat of the sheep.

Dr. MOHLER. That is true.

The CHAIRMAN. He made another very interesting suggestion—that the dog was the natural enemy of the sheep. If you want to grow sheep successfully in my section of the country, you will have to handle the dog proposition. My recollection is that he suggested a Federal tax of about \$5 a head on dogs.

Dr. MOHLER. We have received several hundred letters suggesting that Congress take that action, and I think there is no question but what the dogs and parasites are the two important enemies of the sheep which must be taken into consideration if you want to raise them successfully in the East and South.

The CHAIRMAN. He also made the very interesting statement that he found an almost universal desire on the part of the members of State legislatures to have this tax imposed provided Congress would impose the tax.

Mr. HARRISON. A conference recently was held in Boston to consider what could be done to develop the sheep industry in the Eastern States, and that was one of the subjects discussed there. It is really a matter which should be dealt with by the States and municipal and county authorities.

The CHAIRMAN. Undoubtedly.

Mr. RUBEY. With reference to what the chairman said about bringing the sheep into cut-over lands, I have one county in my district into which thousands of sheep have been brought, and they are being grazed on cut-over land very successfully.

The CHAIRMAN. The same man, as I understand, is getting a similar plan under way with reference to cattle.

Mr. HARRISON. You will notice that a portion of this fund is to be used in assisting in the transfer of cattle and sheep from regions where there is a surplus to other communities where sheep are scarce.

Mr. McLAUGHLIN. If I am not taking too much time, I should like to hear a word with regard to that language which was refused by the House committee and inserted in the Senate, providing for the purchase of land in Idaho and for the erection of buildings there for the sheep-breeding proposition. As I remember, that work was carried on in Wyoming on leased lands, and the department wished to have permanent quarters and proposed the purchase of lands in Idaho.

Dr. MOHLER. There was no land purchased at all. We obtained some Government land at that time, which was withdrawn from entry by the President.

Mr. HARRISON. About 28,000 acres.

Dr. MOHLER. Yes; it covers a portion of several townships, with a few locations omitted which had already been occupied by settlers, but the amount asked for last year was merely to dig wells and to put up sheds, corrals, and fences to take care of the lamb crop. There was allowed by the Senate for this purpose the sum of \$12,280, but on account of the increased expense of everything we did not get the material that we thought we could with that amount of money; so this year we are asking for \$8,000 additional to be used in the equipment of this Idaho experiment station. It does not involve anything for the purchase of land.

Mr. McLAUGHLIN. Have you given up the work on the leased land in Wyoming?

Dr. MOHLER. There was no leased land.

Mr. McLAUGHLIN. But it was private property and you were permitted to use it?

Dr. MOHLER. Yes. It was land owned by a Mr. King. We merely ran the sheep on his land and paid him a small sum per head for the privilege.

Mr. McLAUGHLIN. You say there is Government land in Idaho. Is it held in such a way that you can occupy it permanently or will it be homesteaded and taken away from you?

Dr. MOHLER. It was withdrawn from settlement and transferred by the President of the United States.

Mr. McLAUGHLIN. So that there will be no trouble about you occupying it as long as you wish?

Dr. MOHLER. No, sir; unless the President of the United States decides otherwise.

We are asking for this money in order to put up the required number of sheds and corrals for the lamb crop, for wire fences, and for another well. This territory covers portions of two or three townships with a few points already settled by homesteaders, and it is necessary to have more buildings and more water than if it were in a compact area.

Mr. McLAUGHLIN. Two or three townships means nearly 70,000 acres of land. Do you need as much as that to carry on sheep breeding?

Dr. MOHLER. This is under range conditions, and you will find that there is relatively little feed supplied by this amount of range. There is less than 30,000 acres in the entire tract. It covers portions of several townships, but it does not include all, and, as I have stated, there are a number of homesteads right in the midst of the plot withdrawn by the President for this work.

Mr. McLAUGHLIN. Do you fence the homesteads?

Dr. MOHLER. No, sir; we merely fence our own lambing grounds and our bed grounds and around the sheds and corrals where we are holding our bucks. We have to keep the bucks in certain places at certain seasons. We also wish to fence certain pastures to try out the Australian paddock system.

Mr. McLAUGHLIN. If you carry out your plan just as you would like, how much money is it going to take in the aggregate?

Dr. MOHLER. We are only asking for \$8,000 to complete the equipment of this particular ranch for another year.

Mr. McLAUGHLIN. Is that a part of your plan, or will you ask for more money later?

Dr. MOHLER. We will probably ask for more money later. At the present time the amount of acreage we have is not supplying the feed and forage for the number of sheep we are running there. We have to pay \$15 a ton for hay, and when we made our estimate last year hay in Idaho was bringing just about half that price.

Mr. McLAUGHLIN. You must have some plan for buildings and permanent grounds. How much money does your plan involve?

Dr. MOHLER. The Animal Husbandry Division made a request for about \$20,000, but the Secretary of Agriculture has cut that down to \$8,000.

Mr. McLAUGHLIN. That is for this year, but the \$20,000 was for completing the plant?

Dr. MOHLER. Yes, sir; for what we desired at that time. As the flock increases or new breeds are added, or new lines of work become necessary, that amount may be augmented, but \$20,000 would cover all the expense that we believe will be necessary for several years to come.

Mr. McLAUGHLIN. Is it necessary to have a large number of sheep in order to carry on experiments in breeding?

Dr. MOHLER. No, sir; it is not. We have not a large number, but we have some of different breeds.

Mr. McLAUGHLIN. How many have you got altogether? How many breeds have you?

Dr. MOHLER. We have three breeds. Some of our sheep are Corriedales, imported from New Zealand, and then we have some of the western range sheep, the Lambouillet Merinos, and also crossbreeds.

Mr. McLAUGHLIN. How many sheep altogether?

Dr. MOHLER. Between eleven and twelve hundred sheep. We are selling our young bucks, and I would like to have the privilege of inserting the amount of money we turned back into the Treasury as the result of our sales this last year. We are making money on our sheep proposition, and I would like to put that in the record.

The CHAIRMAN. All right; we will be very glad to have it.

(The statement referred to follows:)

Receipts from sales of sheep and wool produced at the range sheep station of the Department of Agriculture during 1917.

11,400 pounds wool, at 42 cents	\$4, 788. 00
486 pounds wool, at 70 cents	340. 20
14 Corriedale yearling rams, at \$158	2, 212. 00
120 ram lambs, at \$10	1, 200. 00
108 ewes, at \$10	1, 080. 00
40 ewes, at \$15	600. 00
Total	10, 220. 20

Mr. McLAUGHLIN. You remember, Mr. Chairman, there was considerable opposition to the appropriation of the money for the importing of some sheep. I would like to have the witness say a word with regard to the success of those Corriedale sheep imported from New Zealand.

The CHAIRMAN. Yes.

Dr. MOHLER. That importation was only made two years ago, as you will recall, and the lamb crop from the cross of the Corriedale bucks bred to cross-bred ewes has just commenced to develop at the present time. It has not proceeded long enough to give us sufficient information to inform you fully as to the ultimate result.

Mr. McLAUGHLIN. Was the plan of importing those sheep suggested to you or did you suggest it?

Dr. MOHLER. It was a plan advocated by private sheepmen who desired to find out whether the Corriedale sheep of New Zealand would produce a larger animal and a greater amount of fleece than the sheep in this country at the present time.

Mr. McLAUGHLIN. Did you approve of the plan, or simply consent to it?

Dr. MOHLER. We consented to try it out. We wanted to know what it would do.

Mr. McLATCHLIN. You thought it was a good idea, and you have just begun the experiment, but have not completed it?

Dr. MOHLER. That is the idea.

Mr. McLAUGHLIN. It will take several generations, you think, to determine the value of this kind of sheep?

Dr. MOHLER. It will take at least two generations; yes, sir. The sheep are doing very well. They have acclimated well and are thrifty.

Mr. McLAUGHLIN. How many were imported?

Dr. MOHLER. I think 72.

Mr. McLATCHLIN. Do you remember the cost?

Dr. MOHLER. It was around \$85 per head, but I will put that in accurately. I think the appropriation was \$10,000, and it was almost entirely expended, but not completely.

The CHAIRMAN. The appropriation was put in the bill on the floor of the House.

Dr. MOHLER. Yes, sir.

The CHAIRMAN. I do not think the department estimated for it.

Mr. HARRISON. It did not recommend it.

Mr. McLAUGHLIN. But the department approves the plan and wants to carry out the experiment?

Dr. MOHLER. Yes, sir.

RESULTS OF EXPERIMENTS IN THE BREEDING OF CORRIEDALE SHEEP IMPORTED FROM NEW ZEALAND IN 1915.

In 1915 the Bureau of Animal Industry imported 65 Corriedale ewes and 7 rams, at a total cost of \$5,175 for the sheep and \$3,400 for transportation and the expense of making the selections.

Of the original stock 60 ewes and 4 rams are now on hand, together with 25 yearling ewes (now bred), 20 ewe lambs, 5 yearling rams, and 17 ram lambs. The Corriedale rams have also been bred to crossbred ewes and from these matings the bureau has 184 ewes, and an equal number of ram lambs have been disposed of.

The rams not needed in the experimental tests of this flock are sold to commercial sheep raisers under arrangements whereby the bureau can study the development of the lambs raised under typical practical conditions. The first sale was made in August, 1917, when 14 yearling rams were sold for a total of \$2,200.

The 1917 wool clip of the pure Corriedale sheep amounted to 686 pounds and was sold for 70 cents per pound, a total income of \$480.

In 1916 62 Corriedale ewes sheared an average of 10.18 pounds each.

In 1917 62 Corriedale ewes sheared an average of 8.65 pounds each.

In 1917 yearling Corriedale ewes sheared an average of 8.954 pounds each.

In 1916 the crop of lambs from 65 imported ewes was 94 per cent.

In 1917 the crop of lambs from 65 imported ewes was 104 per cent.

In January, 1917, a report was made through the National Wool Grower of the record of the Corriedale flock up to that time. Compared to native long-wool Merino crossbred ewes, which are the home-raised type that come closest to the Corriedales, the following deductions are made at this time:

1. There is no question as to the Corriedales herding satisfactorily in the band on the range.

2. The lamb yields are about the same as in our own crossbreds.

3. The six-month weights of the lambs are slightly lower than in the crossbreds.

4. The Corriedales are much more uniform in fleece and carcass characteristics.

5. The Corriedales produce about the same weight of wool as our own crossbreds, but of better character and lighter shrinkage; consequently more valuable.

6. The fleece of sheep sired by Corriedale rams from crossbred ewes largely hold the bright and lofty character of the Corriedale wool.

7. The Corriedale stock will be of material value in producing the type of stock ewes needed for western ranges in the future. The extent of its influence must necessarily be limited until larger numbers of rams are available. Those now being distributed will serve to show the qualities and practical adaptability of the breed in the sections to which they go.

The CHAIRMAN. The only other item is for the pig-club work, for which an increase of \$10,600 is asked.

Dr. MOHLER. We are doing the most of this work in the Southern States and wish to extend it to the corn-belt States with a view to encouraging production. The statement made by Mr. Harrison about the poultry-club work applies to the pig-club work as well.

The CHAIRMAN. This is the time for recess, and we will continue with the Bureau of Animal Industry to-morrow morning.

(Thereupon, at 12.30 p. m., the committee adjourned until Saturday, December 15, at 10.30 a. m.)

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Saturday, December 15, 1917.

The committee met at 10.30 o'clock a. m., Hon. A. F. Lever (chairman) presiding.

The CHAIRMAN. The committee will please come to order. Turn to page 41 of the Book of Estimates.

STATEMENT OF DR. JOHN R. MOHLER, CHIEF OF THE BUREAU OF ANIMAL INDUSTRY, DEPARTMENT OF AGRICULTURE—
Continued.

The CHAIRMAN. Item 68, for all necessary expenses for scientific investigations in diseases of animals, etc., shows an apparent decrease of \$2,040. There is really no change in that item, is there, Dr. Mohler?

Dr. MOHLER. No, sir, Mr. Chairman. The only reason for this is to balance up the positions that were transferred from this lump sum to the statutory roll. As you know, we employ extra people during the fiscal year, and at the end of the fiscal year transfer them to the statutory roll, according to law; three of these positions are to be transferred from this item and have been provided for under the statutory roll.

Mr. ANDERSON. What is this law requiring the transfer to the statutory roll?

Dr. MOHLER. It provides that all clerical people who have been hired during the fiscal year shall be transferred to the statutory roll at the beginning of the following fiscal year. It is an act of Congress of May, 1910, the agricultural appropriation act for 1911.

Mr. McLAUGHLIN. When you first spoke I thought you were referring to some that were temporarily taken on this lump sum and then put back to the statutory roll, but you mean only those that are engaged during the year?

Dr. MOHLER. Yes, sir.

Mr. McLAUGHLIN. Their first engagement?

Dr. MOHLER. Their first engagement.

Mr. McLAUGHLIN. And after being carried on the lump sum for a certain time they are transferred?

Dr. MOHLER. At the beginning of the following fiscal year they are transferred to the statutory roll.

Mr. McLAUGHLIN. I had a wrong impression from what you said.

The CHAIRMAN. Under this item you do most of your scientific work, do you?

Dr. MOHLER. Yes, sir; the scientific work with reference to animal diseases. These items of expenses are to take care of almost all the scientific investigations of the bureau.

The CHAIRMAN. What discoveries, in the way of control, have you found in reference to contagious abortion?

Dr. MOHLER. All control work on contagious abortion is still in an experimental stage. We are working on 20 herds in Virginia, Maryland, and the State of Texas. As you know, this provision is now only in the second year. It takes considerable time for an animal to bring forth young after conception, and the period that has elapsed since this money was available is not sufficiently long to get any definite results. We are working on three different lines of control now. One is a purely sanitary treatment of cattle on infected farms, the second line of treatment is with vaccines, and the third line is the use of the living germ itself on infected animals.

Mr. ANDERSON. Are these herds owned by the department or by private people?

Dr. MOHLER. Some are owned by the bureau, one is the Naval Academy herd at Annapolis, and the others are owned by private people who are cooperating with us and giving us the advantage of using their animals in this line of investigation.

The CHAIRMAN. Any further questions, gentlemen, on that item? If not, take up your next item, on page 43.

Dr. MOHLER. The next item is number 69, which eliminates all construction of buildings. The experiment station at Bethesda and the farm at Beltsville are affected. It is not to be considered that all of our construction work is completed, but we believe that we can defer any further work for the coming year and therefore no request for an appropriation is made at this time.

Mr. McLAUGHLIN. While you are speaking of buildings, the item just passed, number 68, says "including the maintenance and improvement of the bureau experiment station at Bethesda, Md., and the necessary alterations in buildings thereon." I presume a statement has been made as to the amount of money to be used for each purpose, because under those lump sums, of course, any amount can be used for anything within the limits of the item.

Dr. MOHLER. As I understand it, Mr. Chairman, nothing but temporary buildings can be constructed under a lump-sum item. In order to put up a permanent building it requires specific authority from Congress, and that was what item 69 covered for the present fiscal year. These other buildings you referred to are purely temporary in style and structure. You will notice at the bottom of page 42 there are six portable feed houses, at an average cost of \$187 each. An expense of that kind can be taken from the lump sum, but when it comes to a permanent structure it requires special permission from

Congress, which has been covered under this item 69 in the present year.

Mr. ANDERSON. Is not there a limitation of \$1,500 in the amount, too? I had an impression that there was a law which placed a limitation upon the amount which could be expended from a lump-sum appropriation for a building.

Mr. McLAUGHLIN. I do not know how far that goes. There is a limitation in the Forestry Bureau.

Mr. HARRISON. There is a limitation in the appropriations for the Bureau of Plant Industry and the Forest Service.

Mr. ANDERSON. It only applies to those bureaus?

Mr. HARRISON. Yes, sir; \$1,500 in the Bureau of Plant Industry and \$650 in the Forest Service.

The CHAIRMAN. As I understand it, for the erection of a permanent building you have got to have specific authorization?

Dr. MOHLER. That is the way I understand it.

The CHAIRMAN. I recall a case on the floor several years ago.

Dr. MOHLER. That is my impression, and these temporary buildings were constructed out of the appropriation for contagious abortion. You will note that we have built six temporary sheds at an average cost of \$374 and six portable feed houses at an average cost of \$187 for stabling and feeding six lots of cattle in the abortion experiment.

The CHAIRMAN. Take up the hog-cholera item next, Doctor.

Dr. MOHLER. Item 70 covers our work on hog cholera. You will note that there is an apparent increase in this item of \$33,800 and the transfers to the statutory roll involve a little over \$8,000, so that there is an actual increase of \$42,400 requested. At the present time we have been working in about 32 States on hog-cholera control and we are very anxious to extend this to all the States that desire our cooperation. Of the additional emergency fund provided by the "stimulating agriculture" act we are using about \$231,000 for the extension of this hog-cholera work; but, as you know, that is merely temporary in character, and this amount of \$42,400 is for extending permanently the work in the other States.

Mr. ANDERSON. What is your plan of organization work in hog-cholera control?

Dr. MOHLER. We have two plans of work. One is looking to the absolute control of hog cholera in the States in which we are cooperating with the regulatory authorities, such as the live-stock sanitary boards and the State boards of agriculture. Then we have a second line of work which is purely educational in character, in which we cooperate with the extension leader in the States and with the county agents. In some States, like Iowa, we have 16 men on this hog-cholera control work.

Mr. ANDERSON. On what plan do they work? What is the plan of control? How do you control it?

Dr. MOHLER. In the work where we are cooperating with the live-stock sanitary boards we get information as to where the disease exists, and then, through the State authorities, the premises are quarantined. Our men go out to the premises, make the diagnosis of hog cholera, and recommend the proper method of treatment. Sometimes they treat the hogs themselves, advise so far as

sanitary measures are concerned, and see that the animals are buried and the premises disinfected. In the other line, which is educational work, the extension people have the farmers organized into clubs or various organizations, and our men are called upon to deliver lectures and show stereopticon views to the farmers on the character of hog cholera, methods of dissemination, and how they should protect their herds from infection. It is purely an educational form of propaganda. They also demonstrate the use of serum and take part in campaigns arranged by the colleges to bring to the attention of farmers the possibility of reducing losses by serum immunization.

Mr. RUBEY. And also in those meetings the farmers are informed as to how they may get hold of the serum and all of those things so as to be able to protect themselves if there should be an epidemic?

Dr. MOHLER. Yes, sir. The whole subject of what serum is, how it is made, when and how it should be used, and the benefits to be derived from its use form a part of our discussions.

Mr. LEE. Some years ago some doctor, a man in New Orleans, thought he had discovered a new method of eradicating hog cholera and was going to test it at Ames. Was that test made and was it a failure or a success?

Dr. MOHLER. It was made, and I think Mr. Rubey can confirm my statement that it was not a success in any particular. Some of the hogs vaccinated died from the disease. The material, instead of protecting them, gave them the disease, and they died. Mr. Rubey and Mr. Steele, then a member of this committee, went out to the station at Bethesda and witnessed one test. There were three tests in all. They were all far from being successful.

Mr. LEE. You think there is hope along that line?

Dr. MOHLER. Well, it may be perfected along different lines from what these gentlemen advocated, but at the present time it is far from being successful.

Mr. RUBEY. That is, that test of the gentleman from the New Orleans institution, the name of which I do not now recall.

Dr. MOHLER. Tulane University.

Mr. RUBEY. A Mr. Duval.

Mr. DOOLITTLE. You have 16 men in Iowa?

Dr. MOHLER. Yes, sir; and 15 at this time in your State.

Mr. DOOLITTLE. Fifteen in Kansas?

Dr. MOHLER. Yes, sir.

Mr. DOOLITTLE. I want to state that the work of the Department of Agriculture in Kansas which is being conducted by your representative there, Dr. Murphy, is very successful. The county bureaus are becoming quite numerous in our State, and the matter of hog-cholera control is rapidly gaining ground and is becoming very popular, and the work of the department is very efficient.

Dr. MOHLER. I may say in that connection, Mr. Chairman, that the disease itself reached its highest point in recent years in 1914, when there were about 107 deaths per 1,000 hogs, but it has since rapidly declined, so that for the year ending April 1, 1917, there were only 44 deaths in 1,000 hogs from hog cholera. Thus the results are shown very precisely in the death rate of hogs from this disease.

The CHAIRMAN. Has that been a gradual decline?

Dr. MOHLER. A rather marked decline, Mr. Chairman, the losses now being as low as they have reached at any time during the past 33 years.

Mr. McLAUGHLIN. How about the serum? There used to be considerable difficulty in getting the right kind of serum and as to being sure you got the right kind when you did get it.

Dr. MOHLER. As a result of the act of Congress giving us supervision over biological products, of which this serum is one, we have been able to look after all of these products, and the result has been that during the last fiscal year we condemned about 5,000,000 cubic centimeters of the serum and almost as large an amount of the virus as unfit for use. At least 5,000,000 cubic centimeters of this serum has been condemned as being nonpotent or for some other good reason, and the balance has been put on the market after meeting the required tests of the bureau.

Mr. DOOLITTLE. It was my privilege to attend one of these hog-cholera meetings where the hog-cholera association is formed. Dr. Murphy, of the Department of Agriculture, was present, and they asked him questions regarding the different serums and viruses and so on, and he gave the names of those that were good as well as those which were bad. It struck me as being very specific and very good service.

Dr. MOHLER. I want to say that all the serum produced in the United States is not under Government supervision. Only such serum as is intended for interstate commerce is under the supervision of the bureau. There are a number of firms which produce serum and sell it within the confines of their own States, and we have been getting bad reports from certain serum which was manufactured without any supervision whatsoever.

Mr. McLAUGHLIN. Is there no State supervision in those cases where they do not come under your supervision?

Dr. MOHLER. No, sir; not as a rule. In a number of States there is no supervision at all. A few of the States provide for supervision or insist that no hog-cholera serum can be brought into their States unless it has the license of the Federal Government upon it.

Mr. McLAUGHLIN. But is there any regulation in any of the States regarding the inspection of serum made and used within the State?

Dr. MOHLER. Only a few States have such laws.

Mr. McLAUGHLIN. How many factories are your men inspecting?

Mr. RUBEN. About 87, I think.

Dr. MOHLER. There are only 64 hog-cholera serum plants and 22 other biological products plants under Federal supervision.

Mr. McLAUGHLIN. It is given in the annual report of your bureau?

Dr. MOHLER. Yes, sir.

Mr. McLAUGHLIN. And what is the number of your men employed in that line of work?

Dr. MOHLER. There are about 100. We have supervision over all plants doing an interstate business in biological products, such as mallein, tuberculin, abortion vaccine, anthrax and blackleg vaccines, tetanus antitoxin, and similar biologics.

Mr. McLAUGHLIN. Are these different kinds of serum largely made by the same firms?

Dr. MOHLER. The largest number of individual manufacturers prepare hog-cholera serum solely. There are only four or five large

firms that manufacture a great variety of vaccines, antitoxins, tuberculins, and products of that kind. like Parke, Davis & Co., Mulford & Co., Lederle Antitoxin Co., and the Cutter Co., of California; but the largest number of biological firms manufacture only hog-cholera serum.

Mr. McLAUGHLIN. And your men inspect the manufacture of all these different kind of serums, do they?

Dr. MOHLER. All the material that goes into interstate commerce.

Mr. McLAUGHLIN. That is what I mean.

Mr. HAUGEN. Are there many of the packing houses preparing the serum?

Dr. MOHLER. Yes; there are three or four packers now who have hog-cholera serum plants.

Mr. HAUGEN. Is any further legislation required to give you any further control or supervision such as you would like to have?

Dr. MOHLER. We would like to have a bill such as Mr. Steele of Iowa introduced a year or two ago, with some modifications.

Mr. RUBEN. It has been reintroduced in the House.

Dr. MOHLER. That would help us considerably.

Mr. HAUGEN. But you are getting along satisfactorily?

Dr. MOHLER. We are getting along surprisingly well.

Mr. McLAUGHLIN. Do you find any more serum being made which causes the infection instead of preventing the disease?

Dr. MOHLER. We never find that the serum produces the disease which we are trying to prevent, but we have found serum which was nonpotent, that is, not strong enough to protect, or which had become contaminated with other diseases or even decomposed, and as a result of these findings we have condemned 5,000,000 c. c. of that kind of serum. We have more trouble with hog cholera serum that is not strong enough to protect the vaccinated hogs than we do with serum that is so contaminated as to produce one of the diseases that we are trying to control.

The CHAIRMAN. How do you make the actual tests?

Dr. MOHLER. We take a fair sample of every batch containing 80,000 c. c. of serum and test it upon eight hogs, six of them getting graduated doses of the serum, plus virus, and two hogs getting virus alone without any serum. We expect the two virus hogs to die of hog cholera and the six serum hogs to be protected. In case they are not protected, that serum is not marketed until it is found that it comes up to the standard in potency.

Mr. McLAUGHLIN. How about the supply in the country?

Dr. MOHLER. Well, Mr. Chairman, it just happened that, on account of the high prices of pigs and the cost of labor, there was very little serum prepared in this country in the month of September. Some of the manufacturers did not have the foresight to take into consideration what was going on, and this feeder pig movement that has been so enormous in the last six weeks has caused the use of large quantities of serum, resulting in one or two firms being without any serum whatsoever. They then started a campaign to have us reduce our time on these test hogs. We require a 21-day test on nonimmune hogs before the serum can be marketed, and they wanted us to reduce that from 21 to 15 days in order to get some of their serum released immediately. Thinking that possibly their argu-

ment was correct, I wired to all of our stations where serum is produced and we found that there were 26,000,000 c. c. of serum on the market for sale on the last day of November, only a couple of weeks ago, and there was about 19,000,000 c. c. on test, which will be available in the month of December, besides nearly an equal amount available for test later on.

Mr. McLAUGHLIN. Those figures may mean something to the better informed members of the committee but they do not mean much to me. I would ask relatively, compared to the supply available in former years, what is the supply now?

Dr. MOHLER. There is a greater supply of serum available to-day than at any other period in former years.

Mr. McLAUGHLIN. Very much more?

Dr. MOHLER. Considerably more. This 26,000,000 c. c. available on November 30 would be sufficient for use on over 600,000 hogs, giving large doses.

Mr. McLAUGHLIN. And has that larger supply resulted in the reduction of the price to those who use it?

Dr. MOHLER. No, sir; it has not. The price is about the same. The profit now is not as large because of the higher cost of making the serum and the higher cost of labor, but the manufacturers have not raised the price of serum thus far. Those men who received 2 cents per cubic centimeter heretofore are still receiving that price. Those who received a cent and a quarter or a cent are still receiving that. There is quite a variation in price. It will run from 1 to 2 cents a cubic centimeter, and the folks who formerly received those high prices are still maintaining them.

Mr. RUBEY. It might help the committee for you to state how many cubic centimeters it takes to make an application on a hog.

Dr. MOHLER. We recommend 30 cubic centimeters for a 100-pound hog, and if it is heavier than that we give about one-half cubic centimeter for every pound above that weight. It depends entirely on the weight of the hog. The more serum given the better the result.

Mr. DOOLITTLE. What becomes of the pigs that are taken by these serum plants—I mean, after they are bled and serum is made?

Dr. MOHLER. These hogs that produce the serum?

Mr. DOOLITTLE. Yes.

Dr. MOHLER. They are slaughtered under Government inspection. They are hyperimmune hogs, and if there is nothing found in their carcasses that warrants condemnation they are passed for food.

Mr. McLAUGHLIN. Some of the State institutions manufacture this serum for use in their own States. Is that work extending? Are other States taking it up, I mean?

Dr. MOHLER. Yes. There are a number of agricultural colleges preparing serum for use in their own States, and some of them are selling to adjacent States. Some of them have licenses from the department to sell in that way.

Mr. McLAUGHLIN. Some of them have been doing that for a long time. Have others recently been taking it up? Is that kind of work extending, I mean?

Dr. MOHLER. No; it has not extended within the last two years.

Mr. RUBEY. They are doing a good deal of that work in Missouri.

Dr. MOHLER. Yes; a very large amount in Missouri and in Iowa and California.

Mr. McLAUGHLIN. Do you find it necessary to inspect the State institutions?

Dr. MOHLER. When they are working under our license we make the same inspection as we do with a private institution.

Mr. McLAUGHLIN. Some of the States are able to supply all the serum that is needed within their borders?

Dr. MOHLER. Yes, sir; especially Pennsylvania and perhaps one or two of the other States. They endeavor to prepare their own serum for that purpose.

Mr. McLAUGHLIN. How does the price that is asked for the serum prepared by the State institutions compare with the prices that must be paid for the privately made serum?

Dr. MOHLER. I know of one State that charges only 1 cent a cubic centimeter for the serum, but most of the States charge about a cent and a quarter a cubic centimeter. It will cost at the present time practically a cent per cubic centimeter to make the serum.

Mr. McLAUGHLIN. And, generally speaking, the price charged by the State institutions is considerably less than the price demanded by the private companies?

Dr. MOHLER. No; I would not say that. Except in one or two cases, most of the State institutions are selling at the market price, a cent and a quarter, and they feel distinctly the competition of private plants. Almost all serum firms will sell serum for a cent and a quarter. Two that I know of, one in Indianapolis and one up in Wisconsin, are getting two cents a cubic centimeter.

Mr. HAUGEN. The biggest item of expense is the veterinary surgeon?

Dr. MOHLER. No, sir. The biggest item of expense is the cost incurred in securing virus-producing pigs. That is quite a loss to them.

Mr. HAUGEN. I mean to the farmer?

Dr. MOHLER. Oh, to the farmer?

Mr. HAUGEN. Of course that depends largely on the number?

Dr. MOHLER. That depends a great deal on the number; yes, sir. It is quite an item to the farmer. If he has a small herd, it costs considerable per head to have a veterinarian make the application.

Mr. HAUGEN. Have you any recent reports on Iowa? There was a report out that there was considerable hog cholera in the western part of the State, near Sioux City.

Dr. MOHLER. Yes, sir. That was a peculiar condition of affairs. There had been some hogs shipped into one of the packing houses in Iowa for immediate slaughter. Instead of being slaughtered, they were sold as feeders and allowed to go to the farms in Iowa, where they broke down with hog cholera and several outbreaks of cholera have occurred as a result. As soon as we get information that the disease has broken out in these places, we put our men right after them.

Mr. HAUGEN. Is the outbreak quite extensive at present?

Dr. MOHLER. It is confined principally to the western part of Iowa.

Mr. ANDERSON. Is there no way of insuring the slaughter of these hogs shipped for immediate slaughter?

Dr. MOHLER. That is under the jurisdiction of the State entirely. They tried to do the same thing in Detroit, Mich., last Saturday a

week ago, when I was in Chicago. The State people were there, and they prohibited the hogs from going out into Michigan from the Detroit yards unless they were treated with serum; and they stayed there until they were properly treated. But in these particular cases in Iowa they went out without the treatment and they broke down three or four days after they reached the farmers.

Mr. HAUGEN. Are not the quarantine regulations well enforced?

Dr. MOHLER. In Iowa?

Mr. HAUGEN. Well, in all the terminals?

Dr. MOHLER. Yes; they are. This is not a quarantine regulation. It is the question of a fellow billing his hogs for slaughter to a town and, instead of slaughtering them, he sells them to a farmer, which in the case mentioned was a local intrastate transaction. It is something that is under the State's jurisdiction entirely.

Mr. HAUGEN. My understanding is that before hogs can be shipped from one State to another they have to be inoculated?

Dr. MOHLER. No, sir; that only applies to feeder hogs from public stockyards for purposes other than immediate slaughter, subject to the regulations of the State of destination. Some States require vaccination and others do not.

Mr. DOOLITTLE. Do you have difficulty in getting a sufficient number of veterinarians for your work?

Dr. MOHLER. We have had since the war. A great many of our boys went to the war in different capacities, and we are now forced to employ temporary men. The civil-service list has been exhausted for some time. We are getting quite a number of temporary men.

Mr. HAUGEN. Did I understand you to say that hogs can be shipped in Iowa for immediate slaughter and afterwards sold to the farmer?

Dr. MOHLER. Yes, sir. We have taken that up with the State people to see if that can be rectified, but that has been done.

Mr. HAUGEN. That is a violation of the regulations or the law, whatever it may be—selling where they are shipped in for immediate slaughter.

Dr. MOHLER. It is not a good practice. I do not know what the regulations of the State are.

Mr. McLAUGHLIN. Your jurisdiction over it ceases when they reach their destination in the State from another State?

Dr. MOHLER. Yes, sir. And if the owners want those hogs to go out into the State, it is up to the State authorities to say what requirements, if any, must be met.

Mr. HAUGEN. It is up to the State authorities to see that that is done?

Dr. MOHLER. Yes, sir.

Mr. McLAUGHLIN. It seems to me that that law lacks something. If hogs can not be shipped from one State to another except under certain conditions, and they are shipped for immediate slaughter, the law ought to go far enough to require their immediate slaughter and not permit the sale to farmers within the State.

The CHAIRMAN. Doctor, in how many States are you doing control work—eradication work proper?

Dr. MOHLER. At the present time we are doing it in 32 States.

The CHAIRMAN. And you are asking for this increase here of \$42,400 to carry it into additional States. Into how many additional States do you want to carry it?

Dr. MOHLER. Mississippi is asking us for assistance, and we would like to have four men assigned there. Massachusetts has no men of this kind, and we would like two men for that State. North Dakota requests two men. Pennsylvania, Rhode Island, Vermont, Washington, and Wyoming have had no work of this kind, and we would like to have sufficient men to assign to those States.

Mr. HEFLIN. How many men have you in Alabama?

Dr. MOHLER. In Alabama we have four.

The CHAIRMAN. Anything further on this item, gentlemen? If not, we will take up the next, for all necessary expenses for the investigation, treatment, and eradication of dourine, \$97,800. There is no actual change in that amount, is there?

Dr. MOHLER. The only change is a decrease by the transfer of one clerk to the statutory roll, which has already been discussed.

The CHAIRMAN. Give us a brief statement as to the progress of this work Doctor.

Dr. MOHLER. We are making very satisfactory progress in cleaning up dourine in all the States that have been affected, except on the Indian reservations. This last year we tested about 60,000 horses in these various States, including the Indian reservations, and the amount of dourine found was reduced to 2.4 per cent from over 3 per cent the year before.

The CHAIRMAN. In what States do you now find dourine prevalent?

Dr. MOHLER. We are finding most of it in Arizona and New Mexico, especially on the Indian reservations. In addition to these States, Montana and South Dakota are still infected, while North Dakota and Washington are almost clean.

Mr. HAUGEN. What progress are you making in Montana?

Dr. MOHLER. We are making very satisfactory progress, excepting on the Belknap Indian Reservation and the immediate surrounding territory. We are cooperating with the Indian Office in this work. They are buying all the infected Indian horses, so it does not cost us anything at all except for the labor and the testing of the blood. South Dakota has less of the disease and North Dakota is practically clean this year.

Mr. HAUGEN. Any of it in Iowa?

Dr. MOHLER. No, sir; not for two years. They had an outbreak about two years ago, as you will remember, but that has been stamped out. If we can only clean up these Indian reservations, the whole situation will be very well in hand.

Mr. McLAUGHLIN. Is there any dourine in Michigan?

Dr. MOHLER. No, sir; there has never been any in Michigan.

Mr. McLAUGHLIN. It seems to me that the Government control over these Indian reservations is such that you could do just as you pleased there.

Dr. MOHLER. That is the trouble. They are doing just as they please. We find the suspicious cases, make the tests, quarantine the stallions, and on the next trip our inspector makes there he finds the stallions out on the open range breeding to all the mares they can cover.

Mr. McLAUGHLIN. Where is the fault?

Dr. MOHLER. The individual owner of the animals. We have taken this matter up and we are getting very good cooperation

from the Indian Commissioner here, but it goes through to the farmer on the reservation and then from the farmer to these Indian owners of the infected stock. It is a very difficult proposition to have them appreciate the necessity for keeping up these infected animals.

The CHAIRMAN. Do you still pay the value of the animal destroyed?

Dr. MOHLER. Yes, sir; 50 per cent of the appraised value, but not to exceed \$100 for any animal.

Mr. McLAUGHLIN. The animal is destroyed when he is found to be infected?

Dr. MOHLER. Yes, sir.

Mr. McLAUGHLIN. When you make an investigation on one of these Indian reservations and find a stallion infected and you kill him, how can the careless Indian owner send him out for service?

Dr. MOHLER. There is quite an interval between the time of making the inspection—when our inspector gets the blood—and the time when a decision is reached as to whether that blood is infected or not. The horse is quarantined the day the inspector arrives to take the blood; but by the time he receives a report on the blood and gets back to locate the horse—

Mr. McLAUGHLIN (interposing). How long does it take to make the blood test?

Dr. MOHLER. Five or six days.

Mr. McLAUGHLIN. Where is that analysis made?

Dr. MOHLER. It is made in the laboratories here in Washington.

Mr. McLAUGHLIN. And the blood has to be sent from out there to the laboratories here and the report is then sent back?

Dr. MOHLER. Yes: the result of the test is either wired or written to the West. This procedure has been adopted for this very good reason: The test is made possible only by using the virus of another disease known as "surra," which we do not have in this country. The test is a very complicated one, and I do not want to impose a description of it on you at the present time. Briefly, we are using the infected blood of a disease called "surra" to complete the test, and in order to confine surra to the laboratory solely all these test samples are shipped to Washington rather than have our laboratories moved out to Wyoming or Montana with the possibility of having this surra disease, which is far more serious than dourine and not known in this country, spread out there among the live stock. We inoculate rats here in the laboratory with this surra disease, and then take every precaution to keep the infected rats from spreading the disease to any other animals. Such rats would be a menace in a live-stock community. For that reason it is impracticable to have any tests made near the place where the infected horses are located.

Mr. ANDERSON. Haven't you any authority to enforce your quarantine, when you impose it, on the the owner of the horse?

Dr. MOHLER. Not on the Indian reservations.

Mr. ANDERSON. The Indian Commissioner has some authority; has he not?

Dr. MOHLER. Yes, sir.

Mr. McLAUGHLIN. That would be just the place where the Government officials would have authority, it seems to me.

Dr. MOHLER. We have taken this up with the Indian Commissioner and he is doing everything in his power through the farmer agent to get these animals killed off as soon as possible.

Mr. McLAUGHLIN. I can see the difficulty of enforcing this; but I would not think it would be lack of authority in you.

Mr. HAUGEN. The authority is vested in the commissioner and not in this department.

Dr. MOHLER. We have no authority to quarantine on an Indian reservation.

Mr. RUBEY. You can make a regulation, and inform them that if they do not keep their horses up and quarantined they will not be paid for the horses, and they will probably keep them up.

Dr. MOHLER. It is entirely under the Indian Commissioner. He pays for the condemned horse from his own appropriation, and he tries to get these fellows to obey our instructions. We are merely there in a supervisory capacity; we have no authority at all over the animals.

Mr. HAUGEN. The commissioner is purchasing a considerable number of cattle and horses now?

Dr. MOHLER. Yes, sir.

Mr. HAUGEN. What precaution is taken to prevent the spread of these diseases? Is any inspection required?

Dr. MOHLER. Yes; we have our veterinarians to inspect these animals for scab and other diseases, and all the bulls and dairy cattle are tuberculin tested. The stallions are tested for dourine.

Mr. HAUGEN. The contracts are approved by you?

Dr. MOHLER. Yes, sir; so far as they relate to the health and individuality of the animals presented.

The CHAIRMAN. You made the statement a moment ago that the Indian Commissioner paid for the animals slaughtered on the Indian reservation?

Dr. MOHLER. Yes, sir.

The CHAIRMAN. The department does not contribute to that?

Dr. MOHLER. Not at all, sir. The Indian Commissioner has an appropriation of his own to pay the Indians for horses that are condemned by the Bureau of Animal Industry.

The CHAIRMAN. It occurred to me that, inasmuch as your former statement was to the effect that most of the dourine is now confined to the Indian reservations and that the Commissioner of Indian Affairs paid the losses on the Indian reservations, we might reduce this appropriation.

Dr. MOHLER. That would be very true if you had a large force to do this work for the Indian Commissioner. The only thing the Indian Commissioner pays for is the horses which are slaughtered. The salaries and traveling expenses of our men and the indemnities for infected horses outside of the reservation still fall upon the bureau.

Mr. McLAUGHLIN. Has the Indian Commissioner the authority and fails to exercise it, or has he not the authority, or is there a conflict of authority between you and him, or what is the situation?

Dr. MOHLER. There is no conflict of authority between us at all. What his authority is I do not know. I know that people have been very satisfied with a great many things that he is getting with the division, and that he is very active in enforcing our regulations. The

have regulations that are constantly violated, and I suppose the Commissioner of Indian Affairs finds that some of the Indians violate his regulations. There is perfect cooperation between his office and ours, and as soon as we find these things out we inform the Indian Commissioner accordingly.

The CHAIRMAN. I take it that the very nature of the Indian himself would make it more difficult to enforce the law?

Dr. MOHLER. I think so.

The CHAIRMAN. Anything further on that, gentlemen? If not, take up item No. 72. That is your general administrative work. There seems to be no change there?

Dr. MOHLER. There is no change at all in item 72 from that of the previous fiscal year.

The CHAIRMAN. Your next item is on page 46, item 73. There is no actual change there; only an apparent decrease?

Dr. MOHLER. Yes, sir. That is due to the transfer to the statutory roll of employees whose salaries amount to \$20,180. That has already been referred to in the discussion of the statutory-roll increases.

The CHAIRMAN. This amount here is really in addition to the sum fixed by the meat-inspection act?

Dr. MOHLER. Yes, sir.

The CHAIRMAN. And it largely goes to the payment of salaries?

Dr. MOHLER. Yes, sir.

The CHAIRMAN. Increases in salaries?

Dr. MOHLER. Increases in salaries and increases in the extent of the inspection.

The CHAIRMAN. Is there any special growth in the packing establishments in the country—I mean, in the number; are they spreading out?

Dr. MOHLER. Not to any great extent. This last year the work was conducted at 883 establishments in 253 cities, as compared with 875 establishments in 244 cities for the previous year. You see there are nine more cities receiving inspection and eight more establishments.

The CHAIRMAN. Is there any tendency in the country for the establishment of small packing plants?

Dr. MOHLER. Yes, sir; there has been a considerable tendency, especially in the South, to have smaller packing houses established in the communities.

The CHAIRMAN. I wonder if you have given any consideration to the good policy of somewhat decentralizing the packing business of the country? I heard the question discussed with reference to milling the other night, and it raised quite an interesting point in my mind.

Dr. MOHLER. We are encouraging all these independent packing establishments as much as possible, and as soon as they get in position to do an interstate business we are very prompt to give them all the inspection that is necessary. There have been four or five requests of this kind within the last five months, four of them from the South and one of them from Butte, Mont.

The CHAIRMAN. They are opening one in my own district, or will in a very short while.

Dr. MOHLER. Yes, sir.

The CHAIRMAN. Well, that is neither here nor there.

Mr. LEE. What progress are they making on the very large plant at Jacksonville, Fla., for the importation of cattle?

Dr. MOHLER. The plant is in operation now, and that firm is the only one that has requested permits to bring in cattle from Central America, but thus far no importations of such cattle have been made. Two permits have been issued, but, as I explained yesterday, they can not get the boats to carry these cattle from the place where they have the animals purchased in Central America.

Mr. HAUGEN. How large a concern is this?

Dr. MOHLER. It is Armour & Co.

Mr. HAUGEN. Is it quite a large plant?

Dr. MOHLER. Yes; it is a new plant on the St. Johns River.

Mr. RUBEX. Where are they getting their cattle?

Dr. MOHLER. Some of the cattle are obtained locally, although they ship them in from Nashville, Tenn., and St. Louis.

Mr. RUBEX. All parts of the country?

Dr. MOHLER. Yes, sir.

Mr. McLAUGHLIN. You spoke of a large increase in price in those foreign countries. How much of an increase has there been since the time of the passage of the act permitting the importation?

Dr. MOHLER. All I know is from hearsay. A man who had expected to go down there to buy cattle told me that the price in Guatamala to-day was \$5 more a head than the price on the St. Louis market. I know that when our officials went down there some three years ago the price was very reasonable. I do not recall offhand exactly what it was. I think it was about \$25 a head for steers; that is, approximately 3 cents a pound.

Mr. HAUGEN. I believe Senator Broussard stated that an 800-pound steer could be purchased for \$10 in gold?

Dr. MOHLER. That is about \$20 in their money. I know that our men who went down there to investigate the proposition found that the prices were much lower than in this country, but they have enhanced considerably since. Several people have been down there and got options on some cattle.

Mr. HAUGEN. Are we to understand that the cattle are selling for \$5 more than the cattle in St. Louis?

Dr. MOHLER. That is what I was informed last week.

Mr. HAUGEN. In gold standard or in their money?

Dr. MOHLER. In our money.

Mr. LEE. Senator Broussard's statement was made two years ago, was it not?

Mr. HAUGEN. Yes.

Mr. RUBEX. The object of the whole business was to cheapen the supply of cattle, but according to your statement it has been the reverse. That is on account of war conditions, I suppose?

Dr. MOHLER. You will notice that no importation has been made thus far since the passage of the act on August 10, so there is something preventing the movement.

Mr. McLAUGHLIN. But you think the failure to import is due to the lack of ships?

Dr. MOHLER. The statement I made was concerning the firm at Jacksonville, Fla. They have options on some cattle, but they can

not get possession of ships to bring them in. That reason was given only by that one firm. They are the only persons that have applied for and been granted permits to bring in cattle. The other firm which informed me about the high prices is a different organization entirely, and its representative told me that the reason he was not going to buy down there was that he would have to pay \$5 a head more for the cattle than on the St. Louis market.

Mr. McLAUGHLIN. Without a permit he would not be allowed to bring them in anyway, would he?

Dr. MOHLER. No, sir.

Mr. McLAUGHLIN. Where is his plant located?

Dr. MOHLER. In the South, either at Mobile or New Orleans.

Mr. ANDERSON. I would like to ask Dr. Mohler one question. There seems to be a very considerable increase in the number of clerks transferred to the statutory roll of the Bureau of Animal Industry—considerably larger than the general increase in the appropriation would seem to warrant. Can you give any explanation about that?

Dr. MOHLER. I would like to call your attention to one of the first items in our estimates. On page 31, item 22, you will note we have dropped 50 clerks. That was fully explained yesterday morning by Mr. Harrison. The places dropped all call for a salary of \$900 a year, and it has been entirely impossible to get stenographers at that salary to do our work. The whole explanation was given by Mr. Harrison yesterday morning in your absence to the effect that it was necessary to meet the competition of the War Department and the Navy Department and give such clerks \$1,200. We want to get the right kind of employees and we have been doing that in the last six or eight months. In order to comply with the act which I mentioned earlier this morning these men have to be transferred to the statutory roll the first of the fiscal year, but we propose to drop out \$45,000 worth of statutory positions in that one item, number 22.

Mr. ANDERSON. Well, the situation is just this. You had these clerks on the lump-sum roll at a higher salary than is provided in the item that you referred to?

Dr. MOHLER. Yes, sir.

Mr. ANDERSON. And you simply dropped out the clerks in that item in the statutory roll and transferred these clerks who were drawing higher salaries on the lump-sum roll to the statutory roll?

Dr. MOHLER. We are recommending that that be done.

Mr. HARRISON. Most of these \$900 places will be vacant by the end of this year.

Mr. ANDERSON. I am not so far undertaking to criticize the proposition at all. I do not know that I shall. I am simply trying to get a little information.

Dr. MOHLER. You understand that these salaries being paid to the \$1,200 men come from our activities in the lump fund, so that the money goes to the salaries rather than to the enlargement of the particular project upon which we are trying to work.

Mr. ANDERSON. What is the net increase in clerks in your bureau?

Dr. MOHLER. As shown by the statement on page 33, we ask for the transfer of 63 clerks to the statutory roll, while 50 places at \$900 are to be dropped, thus making the net increase 13. This is theo-

retically correct, but the force is continually changing, so that at the present moment it is no doubt somewhat different.

Mr. HAUGEN. You found it necessary to increase the salaries; that is the idea?

Dr. MOHLER. We could not get anybody worth having at \$900 a year. We were having the work pile up on us.

Mr. HAUGEN. Are these new clerks?

Dr. MOHLER. They are practically all new clerks employed during the present fiscal year, and now we are recommending that they be transferred to the statutory roll in order to comply with the law.

Mr. HAUGEN. At the prices fixed by you under the lump sum?

Dr. MOHLER. Yes, sir; and the lump sum has been correspondingly reduced in every instance in the estimates.

Mr. HAUGEN. Are many of your people resigning?

Dr. MOHLER. Yes, sir; we are losing a large number of our folks some to accept industrial positions and others to go to war.

Mr. HAUGEN. Have you any difficulty in securing an adequate force?

Dr. MOHLER. Thus far we have not had any serious difficulty, but we have been rather slow in getting the sort of people we would like to employ.

Mr. HAUGEN. The 5 and 10 per cent raise was not sufficient, then?

Dr. MOHLER. No, sir; not at all. We lost a large percentage of the lower-salaried people despite the 5 and 10 per cent increase.

Mr. HAUGEN. You have competition all along the line with other departments?

Dr. MOHLER. Yes; we have lost a number of our employees, especially in this \$900 grade, to other departments which are paying higher salaries.

Mr. HARRISON. The War Department is appointing all its clerks at \$1,100, with the understanding that they will be promoted to \$1,200 within three months if they perform satisfactory service.

Mr. ANDERSON. The general impression is that the salaries paid by the Department of Agriculture for clerical services and in general are very much higher than in any other department. I do not know whether that is true or not now, or that it has ever been true, but that certainly has been a very strong impression of the Appropriations Committee.

Mr. HAUGEN. I take it that the average is higher, including the scientists in the department, but not as applied to the clerical work in the department?

Mr. HARRISON. I do not think it is higher at all. Conditions have been so upset within the past year that it would be difficult to make any real comparison now. That some of our salaries are lower is shown by the very fact that other departments have been taking away a number of our employees.

Mr. RUBEY. My impression has been just the contrary to what Mr. Anderson states is the impression of the Appropriations Committee. The impression I have got in the last five or six years is that the salaries paid to stenographers and clerks of that character throughout the Agricultural Department are lower than those paid in the other departments.

The CHAIRMAN. The great bulk of your clerical salaries is fixed by law anyway, and is the same in all of the departments—classes 1, 2, 3, and 4. That is fixed by law.

Mr. HAUGEN. But the committee increases the number.

The CHAIRMAN. That is true, but the bulk of the salaries in all the departments is fixed by the same law.

Dr. MOHLER. That is true.

The CHAIRMAN. The truth about the matter is that the Appropriations Committee has an idea that nobody except the Appropriations Committee can frame an appropriation bill quite right.

Mr. HAUGEN. I should think it would be advisable for the heads of these various departments to confer about these matters, with a view to fixing a uniform salary for all the departments.

The CHAIRMAN. It has got to come.

Mr. HARRISON. The President recently issued an order prohibiting the transfer of employees from one department to another, unless the head of the department in which the clerk is employed gives a statement to the effect that in his opinion the employee can render better service in the other department.

Mr. RUBEY. On this particular subject, I want to ask how long do the clerks in the Agricultural Department work?

Mr. HARRISON. The hours are from 9 to 4.30, or 7 hours a day, but many of the employees work from 9 to 10 hours a day.

Dr. MOHLER. Our accounting office for the last three months has been working from 8.30 o'clock in the morning until 5 o'clock in the afternoon.

Mr. ANDERSON. Do they get overtime pay?

Dr. MOHLER. No, sir.

Mr. HARRISON. Mr. Anderson, there is a law prohibiting pay for overtime.

Mr. ANDERSON. I know it.

Dr. MOHLER. There are more clerks who work overtime than regular time.

Mr. HARRISON. I think that is true throughout the department.

Mr. RUBEY. I am glad to have that statement.

Mr. HAUGEN. Would it not be in the interest of the service to require an addition of labor and increase of salary to correspond? I do not know whether that is a question I should ask at this meeting or not?

Mr. HARRISON. I would prefer not to express an opinion regarding it.

Mr. HAUGEN. All right.

The CHAIRMAN. Take up the foot-and-mouth disease item on page 211. There seems to be no change there.

Dr. MOHLER. There is no change at all, but we would like to have this appropriation available in case of an emergency, merely as an insurance.

The CHAIRMAN. What is the unexpended balance from the \$2,500,000 appropriation included in the agricultural act for 1916?

Dr. MOHLER. The balance from that appropriation is about \$600,000 at the present time. We have spent about \$17,000 in the last year from the previous balance for the investigation of alarming reports of suspected outbreaks of foot-and-mouth disease, but I am

very glad to say there has been no foot-and-mouth disease found in these instances during the past year.

Mr. ANDERSON. If you had a considerable amount available at the end of the year which is reappropriated under the language of this item, would you need as much as a million dollars in addition to that?

Dr. MOHLER. We would not need it at all unless we had an outbreak of foot-and-mouth disease, but if it should occur when Congress is not in session, \$600,000 would not go very far, judging from our experience in the last outbreak. We merely ask it as an insurance against delay in case this disease or any similar disease should occur in this country. We are not only watching out for foot-and-mouth disease but any other diseases, for instance, surra.

Mr. McLAUGHLIN. What is that disease?

Dr. MOHLER. It is a blood disease of horses and cattle that has caused great losses in the Philippines and is prevalent now in Asia and Africa.

Mr. McLAUGHLIN. You are now using that stuff in the investigation for dourine. Is it something similar?

Dr. MOHLER. It is something similar but a great deal more acute and deadly.

Mr. HARRISON. It is more important in times like these than ever before that we have an emergency fund, for reasons that are obvious.

Dr. MOHLER. The only money we used for foot-and-mouth disease in the last year was \$17,000 from the appropriation originally made in 1916 for the salaries and expenses of inspectors, who were chiefly investigating rumors. We have been getting two or three reports of that kind every week during the past winter.

Mr. ANDERSON. If you are not spending any of this and all of this is being reappropriated year after year, you should have quite a fund?

Dr. MOHLER. No; it is not reappropriated. It is the residue of the appropriation from 1916.

The CHAIRMAN. From year to year?

Mr. HARRISON. It does not accumulate from year to year. We can use the carry over to which Dr. Mohler referred, the unexpended balance of the original appropriation, which Congress has reappropriated from year to year, but the million dollars is merely for insurance.

The CHAIRMAN. That goes back to the Treasury?

Mr. HARRISON. That goes back into the Treasury if there is no outbreak of the diseases mentioned in the paragraph.

The CHAIRMAN. That is what I wanted to get at.

Mr. McLAUGHLIN. From what parts of the country have these reports come?

Dr. MOHLER. The last one was from Texas, but we have had them from California, Washington, Massachusetts, Kansas, Nebraska, South Dakota, Colorado, West Virginia, Tennessee, and Missouri.

Mr. McLAUGHLIN. Have there been any scares in the big stock-yards sections of the country?

Dr. MOHLER. Yes, sir. At this time last year there was a very considerable scare at Kansas City, Mo., due to the presence of a disease similar to the foot-and-mouth disease.

Mr. McLAUGHLIN. What was that—stomatitis?

Dr. MOHLER. Yes, sir; vesicular stomatitis; but it was diagnosed as foot-and-mouth disease by a number of persons there in the Kansas City stockyards, and the local authorities quarantined the yards for 8 or 10 days. It caused a great deal of excitement. We immediately sent an expert from Washington, but it was five or six days later before a definite diagnosis of vesicular stomatitis was made. They employed a foreign veterinarian from eastern Kansas—I have forgotten his name, but he was acquainted with the foot-and-mouth disease in the old country and he was the leader among the diagnosticians who thought it was foot-and-mouth disease.

The CHAIRMAN. Is there any further statement you desire to make, Dr. Mohler?

Dr. MOHLER. I believe not.

The CHAIRMAN. All right; we will take up the Bureau of Plant Industry, page 48.

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ANIMAL INDUSTRY.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
INSPECTION AND QUARANTINE.....	\$629,280	\$683,550
<i>Eradication of scabies in sheep.....</i> Cooperation with States in which scabies in sheep exists by providing quarantine measures to prevent the spread of this disease and by demonstrating proper treatment, including the cleaning and disinfection of cars, pens, and other premises, thereby fostering the industry and encouraging greater production of mutton and wool.	123,420	122,700
<i>Eradication of mange (scabies) in cattle and horses.....</i> The object of this work and the methods employed are similar to those followed in the project on sheep scabies.	62,960	62,960
<i>Supervision of interstate transportation of live stock and inspection of southern cattle outside the quarantine area.....</i> Examination and inspection of all live stock unloaded at market centers and public stockyards where the Federal inspection is maintained to determine the presence in any of the animals of diseases which might be communicated to animals in other States; also issuance of certificates covering interstate movement of animals free from disease or which have been treated under bureau supervision.	157,000	157,000
<i>Enforcement of the 28-hour law.....</i> Enforcement of the law requiring that animals being shipped interstate are unloaded for feeding, resting, and watering at least once in 28 hours, and that the animals are handled in a humane manner at stockyards where such unloading is performed.	27,840	27,840
<i>Inspection and tuberculin testing of cattle and mallein testing of horses.....</i> Inspection and tests to prevent the spread of tuberculosis of cattle and of glanders in horses and mules through interstate movement; to prevent the spread of tuberculosis in dairy herds, and to provide milk supplies from cattle free from tuberculosis; to prevent the spread of tuberculosis among pure-bred breeding cattle, and to establish a public registry of pure-bred herds which have been shown to be free from tuberculosis, in order that breeders throughout the country may have assurances of the healthfulness of pure-bred cattle which they are purchasing for the improvement of their herds.	123,800	184,730
<i>Preparation and distribution of tuberculin mallein, and blackleg vaccine.....</i> Manufacture in the bureau laboratories of supplies of tuberculin and mallein for the testing of animals, and of blackleg vaccine for the prevention of blackleg in cattle, and distribution of these vaccines.	16,350	16,350
<i>Investigation and chemical testing of dips and disinfectants.....</i> Chemical and bacteriological studies of dips and disinfectants and of methods of preparing them, so as to insure the employment of properly compounded preparations in official dipping and disinfecting operations.	2,850	2,850
<i>Inspection of animals for importation.....</i> Inspection at ports of entry and the establishment of quarantines when necessary, with a view to prohibit the importation of diseased animals.	62,500	60,500

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ANIMAL INDUSTRY—Contd.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
INSPECTION AND QUARANTINE—Continued.		
<i>Quarantine of animals at ports of entry</i>	\$9,400	\$9,400
Maintenance of quarantine stations for the detention, observation, and testing of imported animals, with the object of preventing the introduction of animal diseases.		
<i>Supervision over importations of hay, forage, and of hides, hair, wool, and other animal by-products</i>	30,500	28,590
To prevent the introduction of animal diseases.		
<i>Inspection and testing of animals for export to foreign countries</i>	8,000	7,060
To insure freedom of export animals from disease.		
<i>Inspection of vessels carrying export animals</i>	2,700	2,700
To provide for the safe transportation and humane treatment of export live stock.		
<i>Investigation of methods of disinfecting hides</i>	960	960
Determination of the best methods for the disinfection of hides, in order to prevent the introduction of infectious material.		
ERADICATION OF CATTLE TICKS	631,560	620,420
<i>Eradication of cattle ticks</i>	581,560	570,420
Extermination of the ticks which spread the infection of splenic fever of cattle, in cooperation with live-stock sanitary organizations in the States concerned.		
<i>Live-stock demonstration work in tick-free areas</i>	50,000	50,000
Cooperation with county agents and with State officials in demonstrating to farmers the best means within their reach to improve and develop the live-stock industry and dairying in the areas freed from cattle ticks in the Southern States.		
DAIRY INVESTIGATIONS	378,930	36,390
<i>Improvement of dairy products</i>	15,000	12,000
To increase the quantities and improve the quality of dairy products and to encourage larger consumption of them on the farm by providing dairy specialists to assist State extension workers in the improvement of farm butter, cottage cheese, cream cheese, etc.		
<i>Dairy farming</i>	96,450	93,450
To encourage the development of the dairy business by instruction and demonstration to farmers in the feeding and breeding of cows and the construction of silos and dairy buildings. Through county agents, in cooperation with agricultural colleges of various States, an endeavor is made to increase economically the average milk and butter production in the United States; and, through the employment of a field instructor skilled in dairying, an effort is made to determine the practicability of the small community raising its economic status. Investigations are also being made to determine the best form of cooperation and organization for the development of bull associations; also to breed Holstein cattle suitable for conditions in the semi-arid portions of the West.		
<i>Dairy manufacturing</i>	86,805	86,805
To improve the quality of milk and cream delivered to creameries and cheese-factories, the quality of the products, and the methods of manufacture, tending to increase the general efficiency of these institutions and their management; investigations to determine in what districts it would be feasible to encourage these lines of industry; inspection of renovated butter, the materials used in its manufacture, and the factories producing this product, as required by the act of May 9, 1902; and assistance to the Navy Department in securing first-class tinned and tub butter, and incidentally a study of the manufacture of butter for storage.		
<i>Dairy research laboratories</i>	70,575	68,035
Investigations are made of the manufacture and handling of commercial ice cream, changes in butter, milk condensing, and also of the bacteriology of milk and the physiology of milk secretion; investigation of the utilization of creamery and cheese-factory by-products and the disposal of their wastes, the manufacture of various kinds of cheese; chemical studies in the feeding of dairy cattle, and investigations of changes which take place in material put into the silo at various stages of maturity.		

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ANIMAL INDUSTRY—Contd.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
DAIRY INVESTIGATIONS—Continued.		
<i>Milk investigations and demonstrations</i> To study the sanitation of city milk supplies, investigate factors influencing the commercial quality of milk, and devise means for producing and handling milk of a superior quality; to study the cost of handling milk in cities, including the cost of various operations in preparing milk for the market; to discover uneconomical methods and to suggest ways of lessening the cost of handling; to ascertain the unit requirements for milk production on the average dairy farm; to learn the increased cost of milk production attributable to modern sanitary methods; to carry on educational work among dairymen and milk handlers, and to unify and make more efficient inspections conducted by State and municipal boards of health.	\$52,050	\$49,000
<i>Dairy experiment farm</i> Study of the breeding, feeding, and housing of dairy cattle and application of principles thus established; study of the effects of various feeds and constituents of feeds upon the animal body, upon growth, and upon the yield and composition of milk, and of the relative values of feeds for dairy production; determination of the best methods of stabling cows, and investigations of problems in the milking and care of cows and their management; investigations in feed production and silage primarily to produce feed for the dairy herd at the Beltsville farm, detailed records being kept of the cost of all farm operations.	19,300	19,300
<i>Metabolism in dairy cows</i> Determination of the total energy of the feed consumed by milking animals, the losses of energy in the excreta, the expenditure of energy consequent upon the consumption of the feed and, by difference, the net energy of the feed; and investigation of the distribution of this net energy of the feed between the two possible forms of production, viz, fattening or milk secretion, and the effect upon it of the quantity and quality of the feed, as well as of other factors.	3,500	3,500
<i>Western dairy extension work</i> Instructions to farmers in the Western States in the feeding of dairy cattle, the raising of calves, construction of silos and dairy buildings, herd-record work, and the selection of purebred bulls, with the object of improving and developing the business of dairying in that section; educational work among dairymen and milk handlers, with a view to improve the milk supply and to unify and make more efficient inspections carried on by State and municipal boards of health; and advice and assistance to creamery and cheese-factory operators and patrons for the purpose of introducing better methods and securing a uniformly good product.	35,250	32,250
ANIMAL HUSBANDRY INVESTIGATIONS	277,580	308,680
<i>Animal genetics</i> Investigation of the effects of animal inbreeding from a scientific standpoint; interpretation of these results with regard to advantages and disadvantages in practical breeding, with suggestions as to the mode of procedure to assure the former without suffering from the latter; study of the mode of inheritance of special traits; and, in general, investigation of the factors which determine the course of the life histories of animals.	6,560	6,560
<i>Animal husbandry experiment farm</i> Maintenance of a farm at Beltsville, Md., for the purpose of affording the bureau proper facilities for conducting investigations in the feeding and breeding of farm animals, including poultry.	15,300	12,800
<i>Beef-cattle investigations</i> To study the cost of maintaining breeding herds and the cost of producing beef animals to various ages; study of methods of fattening cattle and relative importance of various feedstuffs for such purposes, including work with calves, baby beefs, and steers; investigation of methods of wintering stocker and feeder cattle; and determination of the effect of beef-cattle raising on soil fertility. To secure by experimental study with a breeding herd of Shorthorn cattle information on the following points: (a) Is the milking tendency in beef cattle transmitted mainly by the dams through the male line of descent? (b) to what extent does the milk-giving function of the dam influence the beef character of the progeny? (c) by mating thickly fleshed beef bulls whose dams were heavy milkers and beef cows which transmit beef character to their progeny, is it possible to establish a heavy milking strain of beef cattle within a breed the female progeny of which will be double-purpose beef and milk animals and the males strictly of the beef type? To study the loss of weight of live stock in transit and the methods of improving conditions surrounding live-stock shipments. Organization of associations to improve beef cattle and the cooperative purchase and sale of breeding animals; organization of baby-beef clubs and bull clubs and give instructions to farmers by lectures and otherwise of matters of educational value; and by personal visits or correspondence give assistance to farmers and live-stock men on all matters pertaining to beef-cattle work.	23,700	20,940

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ANIMAL INDUSTRY—Contd.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
ANIMAL HUSBANDRY INVESTIGATIONS—Continued.		
<i>Swine investigations</i> Studies of the effect of feed on the growth and quality of hogs and the keeping quality of pork; the effect of feed on the physiological conditions of hogs, the toxic effect of cottonseed-meal feeding, and the methods of farm curing of pork; to stimulate an interest in swine production: to teach farm children improved methods of raising, fattening, and marketing hogs; to instill in them, while young, a love of animals which will result in their taking more interest in life upon the farm; and to furnish them at the same time with some work which will, in a practical way, give an insight into the business side of farm life.	\$10,900	\$19,060
<i>Sheep and goat investigations</i> Investigations of the production of a range type of sheep from stock of Rambouillet blood; the adaptability of Corriedale sheep to western range conditions; study of flock management and problems in range-sheep breeding; study of the factors controlling yields of lambs and the rate of their growth; determination for the main types of agricultural conditions in the farm States and for irrigated and dry-land farming areas of the lines upon which sheep raising can be made most profitable, and dissemination of data as to the profits from the practical management of farm flocks in New England; determination of the most economical methods of breeding, feeding, and management of milking goats for infants' and invalids' use and in commercial cheese making; determination for the various grades of wool the lowest shrinkage due to natural oil that is consistent with the maximum quantity and quality of wool; to learn how far the presence of skin folds and other characters are associated with density of fleece and fineness of fiber; to study the relation of climate, soil, and feed, and also age and heredity, as affecting the growth and quality of wool and other animal fibers used in commerce; to acquaint woolgrowers with the trade requirements and the various grades of wool; and to inform them regarding the best methods of preparing their clip for market.	23,140	45,020
<i>Certification of pedigrees</i> Determination of the purity of breeds and the identity of horses, dogs, and cats imported for breeding purposes under the provisions of paragraph 397 of the tariff act of Oct. 3, 1913.	3,000	3,000
<i>Animal husbandry extension work</i> To encourage the live-stock industry by education and demonstration, work has been carried along the lines of economy of production through the utilization of wastes, by-products, and grazing crops; the use of well-bred breeding stock and their proper care, feeding, and management. Cooperative shipments of car lots of fat hogs by club members have been made to the State fairs, where they contested for prizes and were then sold to packers. The movement of about 150,000 high-grade breeding cows from Texas to the Southeast has been accomplished, and the work is being closely followed up. Sheep-extension specialists are assisting county agents under cooperative arrangement between the bureau and extension departments in various States, their whole time being devoted to conducting demonstrations of field meetings relating to sheep raising and giving individual assistance upon farms. An educational exhibit to explain the best method of raising sheep is being made available for use of county agents and at State and local fairs and association meetings. The specialists aid in the formation and conduct of boys' sheep clubs. Special literature has been published and supplied to specialists and to State extension workers. In the organization of boys' and girls' poultry clubs the agents are making a special effort to stimulate production on even a greater scale than heretofore, which necessarily involves considerable work with the parents of the children and some general extension work.	67,800	64,800
<i>Horse and mule investigations</i> Study of problems in feeding, breeding, and management of horses and mules, with particular reference to their use as farm work animals; investigations in the production of a breed of horses from American material suitable for carriage and general purposes; to breed horses under New England conditions, establishing a stud and using horses of Morgan descent as the foundation; and, incidentally, to preserve the Morgan type and blood lines; improvement of the quality of horses bred on Indian reservations by proper selection and the use of pure-bred stallions.	31,620	29,620
<i>Equipment of sheep farm at Dubois, Idaho</i> Equipment of a sheep farm on Government property in Idaho, for conducting investigations with an experimental flock of sheep previously maintained on a private range near Laramie, Wyo.	12,280	8,000

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ANIMAL INDUSTRY—Contd.

Appropriations and activities.	Allotment (lump fund)	
	1918	1919
ANIMAL HUSBANDRY INVESTIGATIONS—Continued.		
<i>Purchase of land at Middlebury, Vt.</i>	\$15,000	.....
The purchase of land in the vicinity of the Morgan Horse Farm, near Middlebury, Vt., suitable for raising feed for horses and sheep and for providing additional pasturage.		
<i>Breeding horses for military purposes</i>	22,840	\$37,840
To encourage the breeding of horses suitable for military purposes in localities where such horses are the most profitable type for farm use, and to encourage in general better horse-breeding methods among farmers.		
<i>Poultry investigations</i>	21,220	21,220
Study of the effect of rations, the inheritance of egg-production and other characteristics, the incubation of eggs, brooding, and the effect on health of fowls and on fertility of eggs of free range, small and large yards, and various styles of houses; study of the effect of different rations on the health of breeding stock, egg production, rate of growth of young stock, and fattening for market; to improve the quality of the different breeds; to develop and improve meat qualities and the meat-carrying capacity; to study methods of natural and artificial incubation and breeding; and to study the general management, such as free range confinement, various styles of housing and shelter, methods of killing and dressing on the farm, and methods for the control and prevention of mortality in turkeys; study of methods of rearing, feeding, breeding, housing, killing, dressing, and managing pigeons; study of the cost of production of squabs, and possible profits to be expected in this industry; tests of different breeds of pigeons and the crosses of these breeds to determine their suitability and value for the production of squabs, and study of the possible improvement in prolificacy of squab breeders in breeding, selection, and feeding; investigation of the problems underlying the breeding, incubation, and feeding of ostriches in the United States; cooperation with the pathological division of the bureau in studying the diseases and climatic conditions affecting them; study of the marketing of feathers, and assistance to ostrich breeders in the preparation of their product for market; to stimulate an interest in poultry among farm boys and girls; to give a better knowledge of the value and importance of the poultry industry; to encourage better poultry management and the breeding of standard-bred poultry; and to show how increased revenue may be obtained by marketing a first-class uniform product.		
<i>Poultry husbandry extension work</i>	24,160	39,820
To study conditions surrounding the production of the market egg from the farm to the country store; to stimulate an interest in poultry among farm boys and girls through the organization of poultry clubs; to give a better knowledge of the value and importance of the poultry industry; to encourage better poultry management and the breeding of standard-bred poultry; to standardize poultry and poultry products; and to show how increased revenue may be obtained by marketing a first-class uniform product.		
INVESTIGATIONS OF ANIMAL DISEASES	131,600	132,560
<i>Rabies investigations</i>	2,600	2,600
The diagnosis of rabies in animals; study of the disease to find the causative agent and to be able to grow this agent by laboratory methods; determination of the significance of Negri bodies in relation to the causation of rabies.		
<i>Glanders investigations</i>	600	600
To establish the extent of glanders infections among the horses and mules of the country, and to devise a method of vaccination that will protect animals from infection with glanders.		
<i>Forage poisoning or cerebrospinal meningitis of horses</i>	2,100	2,100
Studies having in view the determination of the causative agent of this disease and the devising of measures for its prevention; also detection and study of the lesions of this disease.		
<i>Investigation of animal tuberculosis</i>	10,050	9,330
Investigations in the control and eradication of tuberculosis among cattle, horses, and other domestic animals including studies of the mode of infection with tubercle bacilli the manner in which the disease is disseminated, methods of treatment, and measures necessary to prevent its transmission.		
<i>Investigation of animal abortion</i>	50,000	49,400
Study of the etiology mode of transmission and practicable means of eradicating the disease; devising the most satisfactory method of disinfecting contaminated premises; and determination of the presence of bacillus in suspected samples of market milk, as well as in hairless pigs, and in goats and calves affected with goiter.		

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ANIMAL INDUSTRY—Contd.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
INVESTIGATION OF ANIMAL DISEASES—Continued.		
<i>Investigation of swamp fever.</i> Determination of the nature, cause, and prevention of the so-called swamp fever of horses, and development of an accurate method of laboratory and clinical diagnosis; involves a general study of the so-called filterable or ultra-visible viruses and new methods of procedure in diagnostic technique.	\$2,600	\$2,600
<i>Diagnosis of and immunization against anthrax.</i> Experiments having in view the differentiation between anthrax and other diseases which bear resemblance to it and the perfecting of means of immunization against the disease by vaccination.	1,000	1,000
<i>Investigation of diseases of fowls.</i> Study of the causes and devising satisfactory measures of treatment of diseases of fowls.	1,600	1,600
<i>Miscellaneous biological experiments and investigations.</i> Development of methods for the control of hemorrhagic septicemia; determination of the sociol nature of diseases affecting animals at the National Zoological Park, for the purpose of controlling these diseases; investigations of market milk as it reaches the city after shipment from dairies in the country, for detection of pathological conditions; and miscellaneous investigations of animal diseases as required from time to time.	7,980	7,260
<i>Index catalogue and collection of parasites.</i> Maintenance of a comprehensive card index to the literature of animal parasites and a collection of specimens of parasites for study and reference.	3,000	3,000
<i>Investigation of roundworms of sheep.</i> Development of methods for the control and eradication of these parasites.	9,280	9,260
<i>Investigations of anthelmintics and the treatment of live stock for internal parasites.</i> Determination of the relative values of remedies used against internal parasites, and development of methods for the practical treatment of live stock to destroy or remove internal parasites.	7,900	7,900
<i>Investigation of parasitic protozoa, with particular reference to blackhead in turkeys.</i> Studies of the character and life history of these parasites, with a view to their eradication and control.	2,500	2,500
<i>Investigation relative to the treatment and control of cattle ticks, mange mites, and other external parasites.</i> Investigations to develop the most effectual methods for the eradication and control of external parasites of animals.	7,740	7,740
<i>Miscellaneous investigations of animal parasites, their control and eradication.</i> ... Investigations to develop methods for the control and eradication of miscellaneous animal parasites.	2,540	2,540
<i>General maintenance of Bethesda Experiment Station.</i> This represents overhead charges incidental to the maintenance and upkeep of the buildings, fences, and equipment of the bureau experiment station at Bethesda, Md., together with the cost of planting and harvesting crops and other operations in connection with running the farm, which items can not be segregated and charged against specific investigational projects.	8,160	8,160
<i>Breeding and feeding small experiment animals for disease research.</i> The object of this work is to breed and have available an abundant supply of small experiment animals of definite known history for the various investigations conducted by the several laboratories of the Bureau of Animal Industry.	4,900	4,900
<i>Investigations of stock poisoning by plants.</i> Investigation of the losses of stock from poisonous plants and development of methods for avoiding such losses.	10,950	10,950
CONSTRUCTION OF BUILDINGS AT BETHESDA AND BELTSVILLE, MD.	23,600	.....
The current year's appropriation is allotted as follows: To the animal-husbandry work at Beltsville for the purpose of constructing an incubator laboratory and incubator cellar, 40 by 41 by 30, the sum of \$5,000, now about 50 per cent completed; to the dairy work at Beltsville the sum of \$11,100 for (1) a one-story concrete extension of the west wing of the present dairy barn, 37 by 48, \$3,500, about 75 per cent completed; (2) one two-story concrete calf and bull barn, 30 by 100, \$3,600, not yet started; (3) a one-story frame corn crib, approximately 6,250 cubic feet, not started, \$500; (4) one two-story concrete mule barn, with feed storage, 36 by 54, \$3,500, about 10 per cent completed; to the experiment station at Bethesda the sum of \$7,500 for (1) a reinforced concrete laboratory, 20 by 60 by 20 feet, \$5,000, not started; (2) ten reinforced concrete animal buildings, 14 by 16 by 8 feet, at \$250 each, \$2,500, not started.		

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ANIMAL INDUSTRY—Contd.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
INVESTIGATION AND ERADICATION OF HOG CHOLERA	\$413,100 1 17,000	\$446,900
<i>Eradication and control of hog cholera</i>	431,100	
Control and eradication work in cooperation with State authorities locally charged with the investigation and suppression of infectious and contagious diseases of live stock has consisted of investigation of outbreaks of hog cholera holding post-mortem examinations, diagnosing disease, supervising the treatment of infected and exposed herds, assisting in establishing quarantine and in enforcing rules and regulations governing the movement of sick hogs, securing the cleaning and disinfecting of farm premises and local stock yards; establishing depots or perfecting plans for the supply and distribution of antihog-cholera serum and encouraging uniform methods of treatment and charges by practicing veterinarians; to carry on educational work, in cooperation with the extension divisions of agricultural colleges, which consists of giving instructions and delivering lectures on the subject of hog cholera at farmers' meetings and movable schools to county agricultural agents, farmers, and others assembled to receive needed information of this character.	225,800	247,600
<i>Control of the manufacture, importation, and shipment of virus, serum, toxins, etc.</i>	172,240	167,240
To see that the law, regulations, and instructions governing the preparation, sale, barter, exchange, shipment, and importation of viruses, serums, toxins, and analogous products intended for use in the treatment of domestic animals are properly observed; to determine whether or not licenses should be issued to establishments engaged in the preparation of viruses, serums, toxins, and analogous products, and inspection of methods of preparation and inspection of tests for purity and potency of anti-hog cholera serum.		
ERADICATION OF DOUBINE	99,000	97,800
Inspection of all horses in areas where dourine is known to exist and removal of stallions in such areas from the open range; the securing of blood serum from each animal and its subsequent examination in the bureau laboratory at Washington; slaughter of all mares reacting to the test, and slaughter or castration of all reacting stallions.		
MEAT INSPECTION	3,501,620	3,477,200
<i>Purchase, preparation, and distribution of brands and branding ink</i>	9,500	9,500
To provide suitable fluid and branding appliances for marking carcasses, parts of carcasses, and meat and meat food products inspected under the meat-inspection act.		
<i>Special supervisory inspection</i>	43,500	43,500
To see that the law, regulations, and instructions governing meat inspection are properly observed.		
<i>Laboratory inspection</i>	90,000	90,000
To ascertain whether meat and meat food products prepared in official establishments or under exemption or those shipped interstate by farmers, as well as imported meats and meat food products, are properly labeled, sound, healthful, wholesome, and otherwise fit for human food, and to determine whether any prohibited substance has been used in their preparation or in and about the establishment; also to determine whether the water and ice used in the preparation of meat food products are potable.		
<i>Antemortem inspection of animals</i>	210,000	210,000
To discover animals which show symptoms of or are suspected of being affected with any disease or condition which would probably cause their condemnation in whole or in part when slaughtered, and to hold such animals apart and slaughter them separately from other animals so as to insure careful post-mortem inspection as provided in the regulations governing Federal meat inspection.		
<i>Post-mortem inspection of animals</i>	1,328,000	1,328,000
To make careful examination and inspection of the carcasses and parts of all cattle, sheep, swine, and goats slaughtered at official establishments to determine the presence in any such carcasses or parts of any lesions of disease or other condition which might render the meat or any organ unfit for food purposes; and to condemn and to cause to be destroyed for food purposes all carcasses or parts thereof of animals found on final inspection to be unsound, unhealthful, unwholesome, or otherwise unfit for human food.		

1 Balance of appropriation under the act of Feb. 23, 1914.

2 \$21,000 expended prior to July 1, 1917.

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ANIMAL INDUSTRY—Contd.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
MEAT INSPECTION—Continued.		
<i>Supervision of the preparation and distribution of meats.....</i>	\$1,574,120	\$1,549,700
To inspect meat and meat food products prepared within and brought into official establishments and departments thereof to see that no unfit meat or product is used in the various processes of preparation, packing, salting, smoking, canning, etc., to insure proper labeling, and to see that establishments are maintained in a sanitary condition, that the workers are clean as to person and raiment, and that deleterious preservatives or ingredients are not used; and otherwise to enforce compliance with the meat-inspection law and regulations.		
<i>Inspection of public markets.....</i>	15,000	15,000
To provide for the interstate transportation or export from public markets of portions of inspected and passed meats and products thereof which, when cut or otherwise removed from a marked carcass, part, or container, do not show the inspection legend.		
<i>Supervision of operations conducted under certificates of exemption.....</i>	12,000	12,000
To ascertain whether or not shippers are retail butchers, retail dealers, or farmers, and therefore entitled to exemption under the meat-inspection law; also to see that the premises in which animals are slaughtered or where meat and meat food products are prepared by or for persons who make interstate shipments under exemption from inspection are maintained in a sanitary condition, and that the articles so shipped are sound, healthful, wholesome, and fit for human food.		
<i>Examination of imported meats and meat food products.....</i>	50,000	50,000
To prevent the importation of meat and meat food products of cattle, sheep, swine, and goats which are not properly certified, or which are falsely labeled, or which are unsound, unhealthful, unwholesome, or otherwise unfit for human food, or which contain any prohibited dye, chemical, preservative, or other harmful ingredients.		
<i>Field overhead, and miscellaneous.....</i>	145,500	145,500
To cover the overhead charges, such as details of inspectors in charge, supervisors, clerks, etc., at the meat-inspection stations throughout the United States; also minor activities not included under other projects of this group.		
<i>Investigation and control of the house fly, etc., in inspected establishments.....</i>	1,000	1,000
To devise plans for the control and eradication of the house fly and other insects in establishments operating under Federal meat inspection.		
<i>Bacteriological investigations of meat and meat food products.....</i>	3,500	3,500
To aid inspectors to determine the proper disposition of questionable meat and to enable packers to prevent spoilage, through bacterial investigations.		
<i>Investigation of changes in meats during preservation.....</i>	5,000	5,000
To study the changes which take place in meats during preservation by various methods, with particular reference to the cause of such changes and their effect upon the wholesomeness and nutritive value of the product.		
<i>Investigation of canned meats.....</i>	1,000	1,000
To develop, through chemical and bacteriological studies, information concerning the effect which prolonged storage has upon canned meats.		
<i>Investigation of pathological conditions noted during meat inspection.....</i>	10,000	10,000
The investigation of any abnormal, unusual, or hitherto unnoted condition of interest, directly or indirectly, from the meat-inspection viewpoint, which may be encountered during routine Federal meat inspection. Special emphasis is laid upon infectious conditions and those characterized by malignancy.		
<i>Investigation of trichinosis and measles, and other zoological investigations relating to meat inspection.....</i>	3,500	3,500
To improve methods of meat inspection in so far as parasitic diseases of food animals are concerned.		

1-2742

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

**BUREAU OF CROP ESTIMATES
LIBRARY, DEPARTMENT OF AGRICULTURE**

TUESDAY, JANUARY 8, 1918



**WASHINGTON
GOVERNMENT PRINTING OFFICE
1918**

AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Tuesday, January 8, 1918.

BUREAU OF CROP ESTIMATES.

STATEMENT OF MR. LEON M. ESTABROOK, CHIEF OF THE BUREAU OF CROP ESTIMATES, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. We will next take up the Bureau of Crop Estimates, on page 145. Mr. Estabrook will present the estimates.

On the statutory roll, Mr. Estabrook, you have a few transfers. They are made at the same salary, and the lump sum has been reduced?

Mr. ESTABROOK. Yes, sir.

The CHAIRMAN. In item 7 you submit an increase of five clerks of class 1.

Mr. ESTABROOK. That is due to the very great increase in the work of the bureau, especially since the declaration of war. We have had an unprecedented number of calls for estimates of all kinds—estimates from our field agents regarding conditions in the States and estimates from the Washington office on all sorts of things; the world's supply of food, acreage planted, and crop prospects; where surpluses are to be found; how much acreage we ought to plant to produce what is required, and so on. We have had calls from our own department and from other departments, from State councils of defense, State officials, and various National, State, and local committees, as well as private correspondents all over the country. This has added to the work of the bureau tremendously, both in the Washington office and in the field, and the very small increase in clerical force asked for is barely sufficient to enable us to handle it.

The CHAIRMAN. All right, take up your general expense items. Item 17, page 146, for salaries and employment of labor in the city of Washington and elsewhere. You have an actual increase there of \$2,500.

Mr. ESTABROOK. Yes; we ask for an increase of \$2,500 in this item because we have found in the past two years that it was necessary, under the clause permitting a 10 per cent increase to be transferred from other funds, to transfer the additional amount. The increase we ask for at this time is necessary, and the request was approved by the Secretary.

The CHAIRMAN. Any questions on that, gentlemen? If not, take up item 18, "Salaries, travel, and other necessary expenses of employees out of the city of Washington engaged in field investigations," where you have an estimated increase of \$27,775.

Mr. ESTABROOK. Those increases are fully explained in the notes. An increase of \$9,000 is requested for additional traveling expenses.

Our crop specialists are traveling practically all the time, and whereas \$1,500 is sufficient for a State field agent who travels only within the State and for only about three weeks out of the four, a crop specialist follows the crop throughout the region where it is grown, travels practically 30 days each month, and requires about \$1,000 more to cover his actual expenses. Otherwise he would have to remain at headquarters a portion of the time, and we would not get the best results out of him.

The CHAIRMAN. What does the crop specialist do?

Mr. ESTABROOK. They estimate acreage, condition, yield, and production of particular crops as a whole, without regard to State lines. We have crop specialists for rice, cotton, truck crops, and fruit crops—men who devote their entire time to estimating these crops in the regions of their growth.

The CHAIRMAN. And these men not only report upon the condition of the crop, but also supervise the local men engaged?

Mr. ESTABROOK. Yes. Each of them selects the best-informed men in trucking, in cotton, rice, or tobacco production, or in fruit growing, who agree to report to him periodically on conditions in their neighborhoods. They are all the time organizing this force of voluntary reporters, observing crops and interviewing well-informed men, and necessarily they have to travel throughout the region where the crops are grown.

The CHAIRMAN. What salaries are they paid?

Mr. ESTABROOK. Their salaries range from \$1,608 in the case of a newly appointed crop specialist to \$2,500 in the case of an experienced cotton-crop specialist. They are, as I say, traveling all the time, and it takes \$2,500 to \$3,000 to keep them in the field.

Mr. ANDERSON. If I remember correctly, the Bureau of the Census makes a daily and a semimonthly and a monthly report of cotton-crop statistics. What sort of work is done by your specialist that is not done by the men of the Census Bureau?

Mr. ESTABROOK. The Census Bureau reports, I think, every two weeks, or once a month, during the season, on cotton ginned.

Mr. ANDERSON. Oh, they make half a dozen different reports.

Mr. ESTABROOK. On cotton?

Mr. ANDERSON. Yes.

Mr. ESTABROOK. They report on cotton ginned, cotton seed and cottonseed oil, the supply of these products on hand, exports, and imports. They have agents who go to the gins where cotton is ginned and baled, and to the mills where the cotton seed is crushed, and get the actual figures from the books. They do not estimate either acreage or condition of the growing crop, nor do they attempt to make any forecast of production. Our field agents and our cotton-crop specialist spend their entire time studying the acreage and condition of the crop and estimating or forecasting what the yield per acre and production will be. The bureau's cotton-crop specialist is now studying the question of varieties and the particular areas in which they are grown throughout the United States, and we study the proportion of the total crop grown—that is, short staple as compared to long staple, which is a very important item during this war. That is all information which the Census Bureau can not and does not attempt to supply.

The CHAIRMAN. I notice in your note on page 147 you have an item of \$600 included in this \$27,000 increase for cablegram service from the International Institute of Agriculture at Rome, estimated at \$50 a month. I wish you would tell us about that.

Mr. ESTABROOK. The International Institute of Agriculture at Rome, as you know, is the crop-reporting service for the world. Each adhering country contributes to that service by reporting its crops. The crop reports all go to Rome, are summarized, and the results are sent out all over the world. The Institute combines them into one crop report and cables the world crop estimates back to the contributing countries. When we get out a crop report on the 8th of the month, we prepare a cablegram to the International Institute of Agriculture, and other countries do the same at certain specified dates. As soon as these are assembled in Rome, the Institute cables us the world report. In the past the Institute paid the cost of those cablegrams, but about six months ago we had a notice from them to the effect that their funds were short and that the cablegrams would thereafter have to be discontinued unless we paid the tolls. We felt that the United States wants that information, needs it, and that we are justified in paying for it. So we have been paying for the cablegrams out of our funds.

The CHAIRMAN. What is the organization of the International Institute of Agriculture? I know in a general way what it is and what makes it up. My recollection is that the contributions are about \$5,000 a year that we make. Just how is it run?

Mr. ESTABROOK. It is \$5,000 or \$8,000—I have forgotten which.

The CHAIRMAN. It is a small amount.

Mr. ESTABROOK. Part of that amount goes to the salary of the American delegate, Mr. Lubin, who is really the founder of the International Institute, and a part of it is for general expenses of the Institute, including the cost of these cablegrams and the cost of printing. Those reports are printed in several different languages, and a part of the fund we put up goes to the expense of translating and printing. They issue monthly bulletins giving world statistics of all sorts, such as acreage planted, conditions, and estimated yield and crop production; at the end of the season the amount harvested, stocks on hand, the statistics of imports and exports, prices, land and ocean freight rates, and various information of that kind.

The CHAIRMAN. The monthly report issued by this Institute is more than a report on crop conditions. It is really a discussion of agricultural economics, legislation, and things of that kind, is it not?

Mr. ESTABROOK. Yes. They have various divisions and series of bulletins. One covers diseases and insect pests; there is one on fertilizers; and one set of bulletins covers agricultural legislation in all countries.

The CHAIRMAN. I had often wondered if you could very well separate the real purpose of this Institute, the crop-reporting feature, from its propaganda purposes?

Mr. ESTABROOK. It seems to be all mixed up. They attempt to cover the whole field.

The CHAIRMAN. I do not say that the report is not valuable. It is very valuable. I read it myself.

Mr. ESTABROOK. The cablegram that we get is simply the crop report. They are similar to the last one received at the Department,

which shows the wheat production of the world last year to be 85 per cent of what it was the year before.

The CHAIRMAN. Do you think the Institute is rendering service commensurate with the amount of money which this Government contributes to it?

Mr. ESTABROOK. I think so.

Mr. McLAUGHLIN. Do as many countries report to Rome as when the Institute paid the expenses of all the reports?

Mr. ESTABROOK. I think they go on reporting just the same. It is a question whether they get the reports back from Rome without paying the cost of the cablegrams. The cost of our cablegram to Rome conveying our crop report to the institute is paid out of this \$8,000 that the United States puts up for general expenses.

Mr. JACOWAY. How many countries in the world are there in this institute or society?

Mr. ESTABROOK. My recollection is that there are about 55.

Mr. JACOWAY. Until this society was formed could you ever get an estimate of what the wheat crop of Russia would be? In other words, is not this society directly the cause of giving approximately the wheat supply of Russia and other foreign countries?

Mr. ESTABROOK. Most of these countries had some sort of crop reporting system before the formation of the International Institute, but there was great lack of uniformity in reporting and many countries had very imperfect systems. Such statistics as we had from them were very unsatisfactory. The United States has the best crop-reporting system in the world. The institute has performed a good service in bringing about a somewhat better uniformity in methods of reporting. As a matter of fact, our bureau had such reports as were issued by foreign Governments and continues to get them regardless of the institute.

The CHAIRMAN. Is this the first time that the Department of Agriculture has contributed to this service?

Mr. ESTABROOK. Yes, sir. This is the first time the item has come up at all. It is simply a matter of paying for these cablegrams and getting the information from the institute immediately for the use of the department, which is especially important during the continuance of the war, or foregoing the telegraphic service and waiting several weeks or months for the printed reports to reach us by slow mail.

The CHAIRMAN. Heretofore that has been paid out of the fund carried in another bill?

Mr. ESTABROOK. Entirely.

The CHAIRMAN. Has that fund been reduced, or have the expenses of this work so increased that we can not get this amount out of that fund?

Mr. ESTABROOK. As I recall, the statement by the institute was simply that they did not have funds available. The appropriations from the United States Government have not been reduced. They are the same as formerly. I can only assume that the expenses of the institute have increased so as to render the appropriation insufficient.

Mr. McLAUGHLIN. They are trying to have us make up some of the deficits of other countries?

Mr. ESTABROOK. To that extent they are making us contribute an additional amount.

The CHAIRMAN. In this note you estimate \$4,000 for adding machines for 23 field agents.

Mr. ESTABROOK. Our field agents have been called upon for information this year as never before in preparing all sorts of estimates. They have been overwhelmed with work, and most of that work, of course, is statistical. Every bookkeeper has an adding machine. It adds very greatly to his efficiency and we find that it adds very greatly to the efficiency of these field agents. If they can sit down and make a machine do quickly and certainly what otherwise they would have to do mentally, a much slower process, it adds greatly to their efficiency and involves less chance of error. We felt that it is a good investment to give our field men and our office force every mechanical appliance available.

Mr. McLAUGHLIN. What do the machines cost?

Mr. ESTABROOK. These machines cost about \$175. We use the Dalton adding machine. It is one of the smaller listing and adding machines, but very accurate.

Mr. YOUNG of North Dakota. It is also easier for you to check up the work of the agents if it comes in in that form?

Mr. ESTABROOK. Yes, sir.

The CHAIRMAN. Then you have an item of \$7,500 for stationery.

Mr. ESTABROOK. The necessity for that comes about from the tremendous increase in our field work, which is very largely carried on by correspondence. We have doubled, trebled, and quadrupled the number of schedules to be sent out and the number of envelopes, and it is a problem for the bureau to get enough of these things with the money we have available.

The CHAIRMAN. Then you have an item of \$4,500 for miscellaneous office equipment, emergency travel, renewal of old equipment, etc., in the field service.

Mr. ESTABROOK. As the work in the field has grown, and it has grown tremendously, it has been necessary to give these field agents filing cases in which to keep their records; it has been necessary to give them typewriters and a chair and a desk; and we have given many of them addressograph machines with which they can set up the addresses of their 500 to 1,000 selected crop reporters in the State to whom they send these schedules monthly or oftener. It does away with the slow process of doing it by hand. All of that equipment costs money and takes room. Formerly the field agent had very little, if any, equipment besides a typewriter, but now each one of them has to maintain an office. He is accumulating statistical records of the State. He is getting information by counties and keeping it assembled in that file. It takes a filing case to keep his records in order and accessible, and he has to have his card index of the files, and card-index lists of all these people he comes in contact with over the State who supply him with information.

The CHAIRMAN. Any question, gentlemen? Any other statement, Doctor?

Mr. ESTABROOK. I think not, except to repeat that the small increases provided for in this bill are absolutely necessary to enable the bureau to cope with the present and growing public demand for estimates of crop and live-stock production in this country.

The CHAIRMAN. We are very much obliged to you. I find, in reference to this International Institute of Agriculture, that the total appropriation for that work carried by the Diplomatic and Consular bill of last year amounts to \$16,600.

Mr. ANDERSON. That ought to pay for a few cablegrams.

The CHAIRMAN. It seems to me so.

SUMMARY OF PRINCIPAL ACTIVITIES OF THE BUREAU OF CROP ESTIMATES.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
ADMINISTRATIVE EXPENSES.....	\$24,700	\$24,230
<i>General administration.</i> This is self-explanatory and consists of salaries and other expenditures applicable to the bureau as a whole.	2,722	2,500
<i>Crop reporting and estimating</i>	8,014	9,000
(a) General crops and live stock..... Out of this allotment are paid the miscellaneous expenditures incurred in Washington for supplies, temporary labor, etc., involved in the collection of figures on acreage, condition, farm value, stocks on hand, etc., of general crops and live stock. From this allotment also are paid, except as provided in other appropriations, the cost of emergency inquiries made necessary by the war. The most important development of this work now being planned has in view reports by counties instead of by States. The need for this change has been apparent for some time and becomes necessary now by reason of the fact that the Food Administration calls for figures in that form. This will involve a very large increase in the amount of work to be performed by field agents and in Washington.	(4,650)	(4,000)
(b) Truck-crop investigations..... Under this project the department endeavors to keep in touch with the rapid changes in acreage, condition, and production of various commercial truck crops. The project is comparatively new, the latest undertaking being the weekly publication of revised figures, involving telegraphic reports from the commercially important producing sections of the country.	(2,320)	(3,000)
(c) Fruit-crop investigations..... This is a new project, and so far has been confined to apples. The preliminary work consisted of establishing large lists of orchardists and, so far as possible, the census of trees of bearing age. As soon as possible the work will be enlarged to include peaches and other important fruit crops.	(1,035)	(2,000)
<i>Crop recording and abstracting</i> This project embraces the bureau's work in gathering world-wide statistics on agriculture and making the necessary translations and analyses for use by the department and other investigators. Bulletins are published from time to time embodying the more important statistics accumulated. From 90 to 100 pages of tables showing comparisons over long periods of years of agricultural exports and imports and production are prepared for publication in the Yearbook of the department. There is a constant demand for special statements which can be prepared only from the material which comes to this division. One of the largest libraries of agricultural statistics in the world is maintained.	13,964	12,730
FIELD INVESTIGATIONS.....	175,872	204,337
This appropriation covers the expenditures to be made in the field work under the same projects as are described under "Crop reporting and estimating," administrative expenses. The expenditures cover salaries, travel, station expenses, and the necessary envelopes and paper for the very large volume of mail handled, and are distributed as follows:		
(1) General crops and live stock.....	(139,511)	(159,027)
(2) Truck-crop investigations.....	(20,677)	(25,400)
(3) Fruit-crop investigations.....	(15,684)	(19,910)

LIBRARY, DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Gentlemen, the next in the Book of Estimates is the Library, page 148. There is no change in that at all; the same appropriation is carried. I presume the committee does not care to hear the librarian on that proposition.

AGRICULTURE APPROPRIATION BILL

HEARINGS

REPORT THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

OFFICE OF THE SECRETARY
OFFICE OF FARM MANAGEMENT

THURSDAY, DECEMBER 13 AND FRIDAY
DECEMBER 14, 1917



WASHINGTON
GOVERNMENT PRINTING OFFICE
1917

AGRICULTURE APPROPRIATION BILL.

HOUSE OF REPRESENTATIVES,
COMMITTEE ON AGRICULTURE,
Thursday, December 13, 1917.

OFFICE OF THE SECRETARY.

The CHAIRMAN. Mr. Reese, do you represent the Secretary's office on the statutory roll?

Mr. REESE. On the statutory roll.

STATEMENT OF MR. R. M. REESE, CHIEF CLERK, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Turn to page 8 of the Estimates, Mr. Reese.

Mr. REESE. Mr. Chairman, I assume that the committee desires me to speak only as to changes in these estimates, unless questions are asked.

The CHAIRMAN. Yes; I think you had better speak as to the changes in this bill. The first change is in item 18, on page 8, which provides for two law clerks at \$2,750 each (increase of one by transfer from Weeks Forestry Act).

Mr. REESE. That is the proposed transfer of one law clerk at \$2,750 to the office of the Secretary, without a reduction in the fund from which he is now paid. This is a man who has been doing the law work under the Weeks Forestry Act. That is a special appropriation, and no reduction can be made, but, as stated in the note, there is an item of the Agriculture appropriation bill of this year which authorizes the expenditure of \$25,000 from the amount appropriated under the Weeks Forestry Act for clerical and other services in the city of Washington. That authorization has been correspondingly reduced. The services of this law clerk are needed to help out the constantly increasing work in the office of the solicitor.

Mr. RUBEY. You mean by that, that of that \$25,000 for administrative expenses in Washington, the sum of \$2,750 will not be used.

Mr. REESE. Yes.

Mr. HARRISON. The \$25,000 provision merely authorized the expenditure of that amount from the appropriation made by the Weeks Forestry Act. We have reduced the authorization, but we can not reduce the original appropriation.

The CHAIRMAN. As I understand it, you have got an item in this bill of \$100,000 for the enforcement of the Weeks matter.

Mr. HARRISON. That is for cooperative fire protection.

The CHAIRMAN. And this is out of the other fund.

Mr. HARRISON. This comes out of the original Weeks law appropriation. The provision in question simply authorizes the expenditure of \$25,000 in the city of Washington from that appropriation. It does not carry any funds in this bill.

The CHAIRMAN. It is for use in the city of Washington?

Mr. HARRISON. Yes. We had to get specific authority.

Mr. REESE. That is found on page 19 of the Agriculture appropriation act for 1918 as printed.

The CHAIRMAN. You did not have authority to spend any money in Washington for clerical purposes, and therefore you had to set aside this sum; that was done two years ago.

Mr. REESE. Yes, sir. This transfer will authorize spending \$2,750 less of that appropriation for administrative expenses in Washington; that is all.

The CHAIRMAN. Exactly. Take up the next item on page 9.

Mr. REESE. Items 25, 26, and 27, I think, should be considered together. They involve the transfer from a statutory roll of the Division of Publications of six assistant editors, one at \$2,000, four at \$1,800, and one at \$1,600, with the statutory roll of the Division of Publications correspondingly reduced. The proposition is simply to take these six men off of the statutory roll of the Division of Publications and place them on the statutory roll of the Secretary's Office, where they are under the immediate direction of the Secretary and Assistant Secretaries.

The CHAIRMAN. What was the reason for that? Is it a new policy?

Mr. REESE. It is in line with the Secretary's policy to enhance and increase the publication activities of the department.

Mr. RUBEN. As I understand it, all the editorial work is done in the Secretary's office under the supervision of one of the assistant secretaries?

Mr. REESE. Practically all of it now.

Mr. RUBEN. And you want to put these assistants in there so that they can cooperate with him?

Mr. REESE. Precisely.

Mr. HARRISON. As a matter of fact, they are now detailed to the Secretary's office under the authority we already have. This change simply makes the details permanent.

The CHAIRMAN. All right; take up your next item.

Mr. REESE. Item 29, one assistant in exhibits (by transfer from lump fund for extra labor, Secretary's office), \$2,000. The Office of Exhibits has been called on recently for a great deal of work. I find that in September, October, November, and December they have been called on to make exhibits at 13 important cities—Cleveland, New York, Dallas, Columbus, New Orleans, Chicago, and other places. They have four large expositions pending and authorized by the Secretary, with many other applications on file. The force of the office consists of one expert on exhibits, one assistant, two clerks, and a messenger when we can provide one. The work is growing and the necessity for this assistant is obvious. One man has to remain in Washington to direct affairs, while the other goes out to supervise the actual installation. The committee will notice that this is a transfer to the statutory roll from the lump fund, with-

out a corresponding reduction in the lump-fund appropriation. That lump fund is \$12,000, although it formerly stood at \$14,000. In the act for 1916 it was reduced to \$12,000. I sincerely hope that the committee will authorize the transfer without reduction in the lump fund, for the reason that that lump fund is used to fill up the gaps in the mechanical shops when extra work is necessitated and occasionally to employ additional temporary watchmen and clerks. It is only \$12,000. If it was reduced any further by this transfer, I do not see how we could get along.

The CHAIRMAN. Just briefly, what is the nature of these exhibits?

Mr. REESE. They are demonstrations in exhibit form of all lines of the department's work. Lately they have been devoted largely to food conservation, food drying, canning, and home economics, but we also make exhibits of dairy devices and largely of poultry devices. Forestry and weather problems are also exhibited.

Mr. DOOLITTLE. Is there any duplication, Mr. Reese, in those demonstrations and the demonstrations made by the Bureau of Markets, or anything that the Food Administration may advise?

Mr. REESE. I think not. We are working in very close cooperation with the Food Administration.

Mr. DOOLITTLE. You do some of their work for them?

Mr. REESE. I hardly think so.

Mr. DOOLITTLE. If you did not do it, then they would have to do it if they made a demonstration?

Mr. REESE. I do not think they could do it. They do not have the material and we have. By years of accumulation we have all kinds of material on hand, and it is simply a question of keeping it in first-class order and shifting it from place to place.

The CHAIRMAN. Go ahead.

Mr. REESE. Item 32 involves an increase of one clerk by transfer from the Federal Horticultural Board, with the roll of that board correspondingly reduced. This is a clerk who has been on detail to the office of the Secretary and is needed there permanently to help handle the vastly increased work of that office.

The CHAIRMAN. Take up the next.

Mr. REESE. Item 33 is a net increase of one clerk at \$1,600. This also is a clerk now detailed to the office of the Secretary and needed there for the same reason as the one above. The work in the Secretary's office has increased so greatly that it can not be kept up to date without additional help.

Mr. HARRISON. Perhaps it would help to clear the record now to say that in all these transfers to the statutory roll the lump-fund rolls have been correspondingly reduced, except in the following cases, all of which occur in the Secretary's office: One is the assistant in exhibits, which has just been discussed; two under the Weeks law appropriation; and two under the Federal-aid road act appropriation. The appropriations in the last two cases, of course, could not be reduced.

The CHAIRMAN. That should simplify the matter.

Mr. REESE. That is set forth in summary form on page 16 of these estimates.

Mr. WASON. Mr. Chairman, I do not understand this. It says in item 33 a decrease of one clerk of class 3 by transfer to the statu-

tory roll of the Federal Horticultural Board, and just above that you increase the number of clerks of class 4 by transfer of one from statutory roll of the Federal Horticultural Board. Is there a shift of clerks there?

Mr. REESE. Yes; there is a decrease of one clerk of class 3 by transfer to the Federal Horticultural Board from the Office of the Secretary.

Mr. WASON. What is the reason for that?

Mr. REESE. It is a shift made necessary by the work of the department. As I recall it, that was an accountant.

Mr. HARRISON. Yes; it was an accounting clerk.

Mr. REESE. An accounting clerk, whose services were needed in the Federal Horticultural Board. Under item 33 we also take a clerk from the Federal-aid road act appropriation and one from meat inspection. It is frequently necessary in connection with the work of the department that these shifts be made, transferring a clerk from one place to another.

Mr. WASON. I would assume that, but I was wondering about the particular need of taking one from the Federal Horticultural Board and putting one back.

Mr. REESE. Because of the different qualifications of the employees who are transferred. A man whose qualifications are better for one job than for another we would shift from one branch to another as the needs of the work demanded.

Mr. WASON. Do you happen to remember the names of the two clerks who were shifted?

Mr. REESE. Under item 32, Mr. L. V. Woulfe.

Mr. WASON. And in item 33, do you remember the name of the clerk transferred to the Federal Horticultural Board?

Mr. REESE. That was Mr. Henry W. Syfrig, a stenographer.

The CHAIRMAN. All right, Mr. Reese.

Mr. REESE. Item 34 involves an increase of one clerk at \$1,400 in lieu of two clerks at \$720. We can not fill clerical places at \$720, Mr. Chairman. The people will not accept that salary. We have two small places at \$720 that we can not use. We can use a \$1,400 man and can get somebody to take the place. This involves a net decrease of \$40, giving us one more clerk at \$1,400 and dropping two at \$720 each.

Mr. WILSON. That is what?

Mr. REESE. That is item 34.

The CHAIRMAN. You have no clerks on the Secretary's roll at \$720 at all now in these estimates?

Mr. HARRISON. That takes them all out.

The CHAIRMAN. Take up 35, Mr. Reese.

Mr. REESE. Item 35 is an increase of four clerks by transfers from other appropriations which have been correspondingly reduced. These clerks are needed in the Secretary's branch and are actually on detail there now. This is the usual adjustment, by taking clerks who have had to be detailed to the Secretary's office, putting them on the statutory roll of the Secretary's office, and reducing the other appropriation accordingly.

The CHAIRMAN. It was found that they were not necessary in the other line of work? Does not that follow? You simply give them the same kind of work that they were doing, for instance, in the

Bureau of Markets, but have them do it in the Secretary's office? Is that the idea?

Mr. REESE. Yes, sir.

The CHAIRMAN. It is not to be assumed, when you take a man from the Bureau of Markets, for instance, and transfer him to the Secretary's office that his work formerly with the Bureau of Markets was unnecessary work at all?

Mr. REESE. Not at all.

The CHAIRMAN. You simply transfer him, with the same character of work, to a different place in the department? Is that the idea?

Mr. REESE. Yes, sir.

The CHAIRMAN. All right.

Mr. HUTCHINSON. Are these clerks under the civil service?

Mr. REESE. Yes, sir.

Mr. WILSON. Those clerks in the \$720 grade were not, were they?

Mr. REESE. Yes, sir.

Mr. HARRISON. By "Secretary's office" we do not mean the immediate office of the Secretary alone. The Secretary's office includes many branches, such as the immediate office of the Secretary, the office of the three Assistant Secretaries, the solicitor's office, the chief clerk's office, the appointment clerk's office, the Office of Exhibits, and other branches. It does not mean that all of these clerks are going into the immediate office of the Secretary.

The CHAIRMAN. Take up the next item—item 41, 13 clerks at \$900 each (increase of one by transfer from Federal-aid roll act). You have already explained that?

Mr. REESE. Yes, sir.

The CHAIRMAN. And, of course, the Federal and road act appropriation is not decreased, because it is an appropriation in another act.

Mr. REESE. No, sir.

The CHAIRMAN. Take the next one, number 42, two clerks at \$840 each (increase of one by transfer from the statutory roll, States Relations Service).

Mr. REESE. That is merely a transfer, the roll of the States Relations Service being correspondingly reduced.

The CHAIRMAN. No. 43. You have dropped one clerk at \$720. You have explained that?

Mr. REESE. Yes.

The CHAIRMAN. No. 44. 14 messengers or laborers at \$840 each (decrease of one by change to electrician's helper, same salary, as below). That is a change of one laborer to an electrician's helper at the same salary?

Mr. REESE. Yes, sir. The employee has been doing the work as an electrician's helper for several years. The Civil Service Commission objects to his being carried that way, and we request the Committee to change his designation. That is attended to further on, in item number 72, also. This number 44 is merely a change in designation of one of these laborers to an electrician's helper at the same salary.

The CHAIRMAN. All right. The next change is No. 48, one mechanical assistant at \$1,800 by transfer from statutory roll, Bureau of Markets.

Mr. REESE. The mechanical assistant is the next man to the mechanical superintendent in charge of the shops. He is an important and very useful official. He has been placed on the Bureau of Markets roll and detailed to the Secretary's office. This is to make the change permanent. The place is taken away from the Bureau of Markets and placed on the Secretary's roll.

Mr. HUTCHINSON. Do they take any other examination when they are placed on the Secretary's roll?

Mr. REESE. No, sir.

Mr. HUTCHINSON. In other words, a man can take the examination for a small office and then be transferred to a larger one; is that it?

Mr. REESE. Yes, in general, that is true, unless the qualifications required are very special, in totally different line of work. For example, a botanist could not be transferred to a position as chemist without taking the additional examination. Where the line of work is the same, he can be changed in this way.

The CHAIRMAN. Number 49, three mechanical assistants, at \$1,500 each, in lieu of one mechanic, \$1,200, as below, with increase of \$300; one cabinet-shop foreman, \$1,200, as below, with increase of \$300; and one superintendent of shop, \$1,400, as below, with increase of \$100. There you have some increases in salaries. Give us a little light on that.

Mr. REESE. From this point on we deal with what might be called the mechanical force of the department. There are several changes and increases recommended. The mechanical shops are finding great difficulty in retaining their experienced men at the present low salaries. The salaries in the Department of Agriculture for these mechanical trades are lower in general than they are anywhere else in similar establishments in Washington.

We have had two mechanics and one man next to the superintendent of shops who have been directing particular lines of work. The superintendent of shops does just what his title indicates. One of these mechanics directs the force of electricians, and the other directs the force of plumbers. They are head men, foremen in fact; yet they are receiving the same salary as some of the men working under them. This is a proposition to place these men who are in charge of three important lines of work in the shop on the same basis as mechanical assistants and give them the same salary of \$1,500 per annum each. The increase for the three involves a total increase of only \$700. It will be difficult to retain these experienced and valuable men unless we do increase them. The temptation now to leave our service and go to other branches of Government work or to outside work at higher salaries is very great indeed. I have been told that one of these men has declined a \$1,500 position outside of the Agricultural Department and is now considering a \$1,800 proposition. He is a man who has been with us 9 or 10 years and knows the plant from top to bottom, is very valuable to us, and I believe if he can receive this small increase he will stay with us; otherwise we will lose him. I am not exaggerating the difficulty of securing men to take the place of these three mechanical assistants under present conditions. The Civil Service Commission can hardly furnish us any eligibles at all in the skilled mechanical grades. I might give you the experience we have had with regard to carpenters. Four of them resigned during 1917 for higher pay. We obtained a certification

from the Civil Service Commission of five names, and all declined. We got another certification of three names; two of those declined and one accepted. The one who accepted was an elderly man, who worked for a few days and then failed to report for duty. I heard this morning that he is dead. That illustrates the difficulty. We lose our men, we get certifications from the Civil Service Commission and the men certified will not accept the places. That is why we are so keenly interested in securing for these three competent leaders a slight increase in salary.

The CHAIRMAN. How will these salaries compare with the salaries for this type of work in the outside world?

Mr. REESE. Take a foreman electrician, for example, as one of these men is a foreman electrician. The union rate of pay for such a man is \$6 per day, which will run about \$1,878 per annum. Another of these men is a foreman plumber. The union rate is the same in this case—\$6 per day. At the Bureau of Engraving and Printing the foreman electrician receives \$2,100; in the Government Printing Office, \$2,000; the man at the Capitol here receives \$1,600; and so it goes. Foremen plumbers' wages are all correspondingly higher than ours. If you care for the figures, I have them here.

(The statement referred to follows:)

Comparison of rates of pay in the Department of Agriculture of foreman electricians, plumbers, and cabinetmakers, with salaries paid in other departments of the Government and with the union scale.

Service.	Foreman of electricians, elevator machinists, elevator conductors, machinists, etc. (per annum).	Foreman of plumbers, pipe fitters, tin-smiths, sheet-metal workers, and black-smiths (per annum).	Foreman cabinetmakers, carpenters, model makers, pattern makers, millmen, etc. (per annum).
Bureau of Engraving and Printing.....	\$2,100	\$1,665	.....
Government Printing Office.....	2,000	1,627	\$2,000
Capitol.....	1,600	1,500	.....
District of Columbia.....	1,565	.....	1,565
Department of Agriculture.....	1,400	1,200	1,200
Union rate (\$6 per diem).....	1,878	1,878	1,878

The CHAIRMAN. Is the volume of work in the Department of Agriculture as great as the volume of work of these other men?

Mr. REESE. The foreman of the electrical and machine shops has 33 men under him, and we have electric bells, electric elevators, electric buzzers, electric lights, telephones, and special electrical laboratory apparatus of all sorts scattered through about 26 separate buildings, which these men have to take care of.

Mr. OVERMYER. Of course, it takes up all of their time?

Mr. REESE. Yes, sir.

Mr. HARRISON. These are the only increases in the estimates and they are made necessary by the abnormal industrial situation.

The CHAIRMAN. Take up No. 50.

Mr. REESE. One engineer, increase of \$200 submitted. The same argument applies in his case. The union rate for a chief engineer is \$6.50 per day, which will amount to \$2,372.50 per annum. In the Bureau of Engraving a corresponding engineer gets \$1,800. In the

Government Printing Office, the same man gets \$2,000; in the Capitol, \$1,800. This engineer is an experienced man who has been with us for a number of years. He is only getting \$1,400, and for the same reasons we may not keep him if we do not give him a little more money.

Comparison of salary paid the chief engineer in the Department of Agriculture with the rates of pay in other Government departments and with the union scale.

	Rate per annum.
Bureau of Engraving and Printing-----	\$1, 800
National Museum-----	1, 800
Government Printing Office-----	2, 000
Capitol-----	1, 800
District of Columbia-----	1, 750
Department of Agriculture-----	1, 600
Union rate (\$6.50 per diem)-----	2, 373

NOTE.—In some of the above departments, the power plants are considerably smaller than that of the Department of Agriculture.

Mr. WILSON. How long has this engineer been in the service?

Mr. REESE. Since July 16, 1908.

The CHAIRMAN. All right. Take up the next, item 51, one electrical engineer and draftsman, increase of \$200. Is that the same line of argument?

Mr. REESE. That is the same line of argument, exactly. In the Navy Department they are advertising for draftsmen at \$6 per diem. They have to do it to get the men. At the Bureau of Engraving and Printing similarly rated men get \$1,602.56.

The CHAIRMAN. All right. Take up items 54 and 55.

Mr. REESE. Items 54 and 55 and certain others which will follow later are discussed in a letter which the Secretary of Agriculture has signed, addressed to the chairman of this committee, recommending a slight change in these estimates.

(The letter referred to follows:)

DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, December 13, 1917.

Hon. A. F. LEVER,
Chairman, Committee on Agriculture,
House of Representatives.

DEAR Mr. LEVER: In the estimates for this department for 1919 as submitted certain minor promotions and a few additional places inadvertently were omitted. I request that they now be included and considered in the estimates.

Items 54 and 55. These items provide for one fireman at \$840 and seven at \$720 per annum, or eight in all. It is desired to provide for nine firemen at \$840. An additional statutory place is required to provide for a fireman now carried on the extra labor roll. These men work eight hours per day, including Sundays and holidays. Their work is extremely arduous, and it has been impossible to retain a satisfied working force. At the present time only one fireman in the plant has been in the department's employ for more than a year. The changes have been so rapid, owing to firemen leaving to accept positions in other departments at higher rates of pay, that the civil-service list has been exhausted, and five men temporarily are now filling these positions pending certification.

Item 57. This item provides for 14 elevator conductors at \$720 each. In order to provide for the increasing number of elevators operated by the department, it is recommended that two elevator conductors at \$720 per annum be added. There are 22 electric elevators now operated by the department,

one of which is operated 24 hours a day, requiring three operators for this one car.

Items 78 and 79. These items provide one plumber's helper at \$840 and two plumbers' helpers at \$720 each. It is recommended that this be changed to four plumbers' helpers at \$840. This will provide for promotion of two plumbers' helpers from \$720 to \$840, and one new place. There are five plumbers in the mechanical shops and at present but three helpers. An additional helper is required to increase the working efficiency of the present force.

That a salary of \$720 per annum is too low is indicated by the following facts: One helper resigned to accept a position in the National Museum at an increased salary. He was replaced by another helper who, after working a short time, resigned to accept a position in the navy yard at a very much greater salary. In trying to fill this position the civil-service list was exhausted and authority was obtained to secure a helper outside of the register. One man was employed, but after serving a short time he resigned to accept a position as skilled laborer at \$840. The position is now vacant.

Items 94 and 96. Item 94 provides for 21 assistant messengers, messenger boys, or laborers at \$600 each. It is desired to provide for the promotion of four laborers from \$480 to \$600 each, making 25 in all at \$600, and to decrease the number of laborers or messenger boys at \$480 (item 96) from 23 to 19. These laborers are coal passers in the central power plant and, like the firemen, are required to work eight hours a day, including Sundays and holidays. Their work is extremely arduous, and a salary of \$480 per annum is entirely inadequate. There have been several resignations from this force, and at present there are two vacancies which the department is having great difficulty in filling, as the current wage of laborers is in excess of \$480 per annum.

The changes in the estimates recommended are indicated in the attached table, which also shows the net increases under each item and the net total increase.

Very respectfully,

D. F. HOUSTON, *Secretary.*

		Increase.
1. Item 54: 1 fireman	\$840	
Item 55: 7 firemen, at \$720 each	5, 040	
	<hr/>	\$5, 880
Change to 9 firemen, at \$840 each		7, 560
		<hr/>
Promotion of 7 from \$720 to \$840 each.		\$1, 680
One new place at \$840.		
2. Item 57: 14 elevator conductors, at \$720 each	10, 080	
Change to 16 elevator conductors, at \$720 each	11, 520	
	<hr/>	1, 440
Two new places at \$720 each.		
3. Item 78: 1 plumber's helper	\$840	
Item 79: 2 plumber's helpers, at \$720 each	1, 440	
	<hr/>	2, 280
Change to 4 plumber's helpers, at \$840 each		3, 360
		<hr/>
Promotion of 2 from \$720 to \$840 each.		1, 080
One new place at \$840.		
4. Item 94: 21 assistant messengers, messenger boys, or laborers,		
at \$600 each	12, 600	
Change to 25 assistant messengers, messenger boys, or laborers,		
at \$600 each	15, 000	
	<hr/>	2, 400
Promotion of 4 laborers from \$480 to \$600 each.		
		<hr/>
Gross increase		6, 600
5. Item 96: 23 laborers or messenger boys, at \$480 each	11, 040	
Change to 19 laborers or messenger boys, at \$480 each	9, 120	
	<hr/>	
Decrease		1, 920
(See preceding note.)		
		<hr/>
Net increase		4, 680

Mr. REESE. Items 54 and 55 together provide for eight firemen, one at \$840 and seven at \$720. We would like to have that changed to nine firemen at \$840, and the reason is the same. We can not keep the men. Firemen in other branches of the service get as high as the union rate of \$3.60 a day, or \$1,314 per annum. The Government Printing Office pays \$1,314 and the Capitol pays \$900. I might add that only one fireman has been in the department more than a year. All the others have left to accept higher pay elsewhere. The civil-service lists have been exhausted and five firemen are now temporarily employed on civil-service authority pending certification.

The CHAIRMAN. You want to drop both of those items and increase by one the number of firemen, and increase their salaries to \$900?

Mr. REESE. To \$840.

The CHAIRMAN. All right. Take up the next, one chief elevator conductor, by transfer from lump fund for warehouse act, Bureau of Markets, \$840. Has the lump fund been reduced?

Mr. REESE. Yes.

The CHAIRMAN. I presumed it had from the statement Mr. Harrison made.

Mr. REESE. Yes; the appropriation has been correspondingly reduced.

The CHAIRMAN. No. 57, 14 elevator conductors at \$720 each, increase of one by transfer from lump fund for collecting and distributing market information, Bureau of Markets. There is really no change in the number of elevator conductors there at all.

Mr. REESE. That item 57 is also included in the letter from the Secretary of Agriculture, to which I have referred. Instead of 14 at \$720 we would like to make it 16 at \$720, for the reason that we have an increased number of elevators to take care of. We now have 22 electric elevators in the department and 2 hydraulic elevators, and in one case, in the Bureau of Markets, we have found it necessary to run an elevator all night. Some of their people work from 4 o'clock to 11 and other from midnight to morning. That is an eight-story building, and we have to run the cars to accommodate the people. To afford these men any relief at all from their work we must give them some annual leave, so that the 16 elevator conductors, with whom we desire to operate 22 cars, does not look to be an excessive number. We hope the committee will see it that way.

The CHAIRMAN. The next is "One superintendent of shops, \$1,400, changed to mechanical assistant at \$1,500." as above. You have explained that?

Mr. REESE. That is explained above.

The CHAIRMAN. Then No. 61, 10 cabinetmakers or carpenters, at \$1,260 each, in lieu of 3 cabinetmakers or carpenters, at \$1,100 each, with increase of \$160 each, and 7 cabinetmakers or carpenters, at \$1,020 each, with increase of \$240 each.

Mr. REESE. The same line of argument applies precisely. Our experience is that competent men in the Department of Agriculture are not paid wages or salaries comparable to those paid in other branches of the Government.

Mr. WASON. Does that mean an increase in your number?

Mr. REESE. Not in the number; the number remains the same, but we are requesting a small increase in their wages.

Mr. WASON. How many hours a day do these men work?

Mr. REESE. Seven and one-half. If the committee cares for comparative figures on these cabinetmakers and carpenters, I have them here.

The CHAIRMAN. Just insert that into the record at this point.

(The matter referred to follows:)

Comparison of rates of pay in the Department of Agriculture of cabinetmakers and carpenters with salaries paid in other branches of the Government and with the union scale.

Service.	Rate.	Annual equivalent.	
		From—	To—
Bureau of Engraving and Printing.....	\$4.40 per diem.....		\$1,377.20
Navy Yard.....	\$3.60 to \$4.72 per diem.....	\$1,151.84	1,477.36
National Museum.....	\$90 per month.....		1,080.00
Government Printing Office.....	55 cents per hour.....		1,377.20
Capitol and grounds.....	\$4.50 to \$5.50 per diem.....	1,408.50	1,721.50
District of Columbia (cabinetmakers).....	\$4.25 per diem.....		1,330.25
District of Columbia (carpenters).....	\$2.50 to \$5 per diem.....	\$782.50	1,721.50
Department of Agriculture.....		900.00	1,200.00
Union rate.....	\$4 to \$5.50 per diem.....	1,252.00	1,721.50

Mr. WILSON. There is no doubt but that all of these men need the increase in salary in order to live properly.

Mr. REESE. Not the slightest in the world. How they exist with families is difficult to conceive.

The CHAIRMAN. Take up the next.

Mr. REESE. Nos. 62 and 63 are precisely along the same lines. The supporting data are the same in every case. Number 62 covers cabinetmakers at one rate and number 63 cabinetmakers at a lower rate. We are giving them all a small increase, as clearly set out in the estimates. The argument is the same in each case.

Mr. WILSON. How many of these increases are there?

Mr. REESE. Forty-nine, all in the mechanical shops.

Mr. WILSON. These increases all seem very reasonable, and why not pass them up? There is no opposition to them in the Committee, so far as I know.

Mr. HARRISON. They are all set out in the statement inserted in the record at the beginning of these hearings.

Mr. WILSON. And it is just taking our time with unimportant matters.

The CHAIRMAN. There are only a few more items; 64, 65, 67. and 68 have already been explained?

Mr. REESE. All these increases are submitted on the same theory; and all are shown in the statement Mr. Harrison has prepared for you. I will insert in the record a comparative statement of the rates of pay for electricians and wiremen in other Departments of the Government.

(The matter referred to follows:)

Comparison of rates of pay in the Department of Agriculture of electricians and wiremen with salaries paid in other branches of the Government and with the union scale.

Service.	Rate.	Annual equivalent.	
		From—	To—
Bureau of Engraving and Printing.....	\$4.48 to \$4.80 per diem.....	\$1,402.24	\$1,502.40
Navy Yard.....	\$4.88 to \$3.52 per diem.....	1,527.44	1,101.76
Government Printing Office.....	\$4.80 per diem.....		1,502.40
State, War, and Navy Building.....	\$1,200 per annum.....		1,200.00
Capitol and Grounds.....		1,200.00	1,440.00
District of Columbia.....	\$3.50 to \$4.50 per diem.....	1,095.00	1,408.50
Department of Agriculture.....		900.00	1,200.00
Union rate.....	\$5 per diem.....		1,565.00

Mr. REESE. Nos. 70 and 71 are placed there to square up the adjustment above.

The CHAIRMAN. No. 72.

Mr. REESE. No. 72 is the same thing, and the same argument applies. We have had 13 different men in these three places of electrician's helpers since January 1, 1917, and have twice exhausted the civil-service lists.

Comparison of rates of pay in the Department of Agriculture of electrician's helpers with salaries paid in other departments of the Government and with the union scale.

Service.	Rate.	
	Per day.	Annual equivalent.
Bureau of Engraving and Printing.....	\$2.69	\$841.97
Government Printing Office.....	3.20	1,001.60
State, War, and Navy Building.....		840.00
District of Columbia.....	3.00	930.00
Department of Agriculture.....		720.00
Union rate.....	3.50	1,095.00

The CHAIRMAN. You explained the increase of one electrician's helper at \$840 under item 44?

Mr. REESE. I explained that under item 44. The same argument precisely applies, of course, to painters. in the next group of 74 to 77.

This man in item 74 is the foreman painter. He is exceptionally efficient and receives only \$20 per annum more than the highest paid painter working under his supervision. Other departments pay their foremen painter as follows:

	Per annum.
Bureau of Engraving and Printing.....	\$1,252.00
Government Printing Office (inkmen).....	1,377.20
District of Columbia.....	1,408.50
Capitol.....	1,565.00

The rates in the Department of Agriculture range from \$900 to \$1,020 per annum. The union rate is \$6 per day.

Item 77 provides an increase of \$180 for each of five plumbers or steamfitters at \$1,020 each, or \$900 in all. I will include in the

record a comparative statement of the wages paid such men in other branches of the Government.

(The statement referred to follows:)

Comparison of rates of pay in the Department of Agriculture of plumbers and pipe fitters with salaries paid in other branches of the Government and with the union scale.

Service.	Rate.	Annual equivalent.	
		From—	To—
Bureau of Engraving and Printing.....	\$4.48 per diem.....		\$1,402.24
Navy Yard ¹	\$3.44 to \$4.40 per diem.....	\$1,076.72	1,377.20
National Museum.....	\$1,200 per annum.....		1,200.00
Government Printing Office.....	60 cents per hour.....		1,502.40
State, War, and Navy Building.....	\$1,000 per annum.....		1,000.00
Capitol and grounds.....	\$4.50 per diem.....		1,408.50
District of Columbia.....	\$4.75 per diem.....		1,486.75
Department of Agriculture.....			1,020.00
Union rate.....	\$4.50 to \$5 per diem.....	1,408.50	1,565.00

¹ Have been increased, so that the present rate is higher than that given above.

The letter of the Secretary of Agriculture to which I have referred deals with items 78 and 79 also. The two items together provide for three plumber's helpers, one at \$840 and two at \$720. What we would like is four plumber's helpers at \$840. We have five plumbers and three helpers. One more is necessary, and the same argument for the increase in that very small salary applies throughout. We have lost one good plumber's helper. He was replaced by another who in turn resigned to accept a position in the navy yard at a much larger salary. In trying to fill this position the civil-service list was exhausted and authority was obtained to hire a helper outside of the register. One was hired and in a short time he resigned to accept a position outside, and the place is now vacant.

Item 80 provides an increase of \$120 for a blacksmith. The same argument applies in this case as in other trades. The rates of pay for blacksmiths in other departments follow:

Comparison of salary paid to blacksmith in the Department of Agriculture with rate of pay in other departments and with the union scale (September, 1917).

Service.	Rate.	Annual equivalent.	
		From—	To—
Bureau of Engraving and Printing.....	\$2.88 to \$4.48 per diem.....	\$1,014.40	\$1,402.24
Navy Yard.....	\$3.28 to \$4.48 per diem.....	1,026.64	1,402.24
National Museum.....	\$80 per month.....		960.00
Government Printing Office.....	55 cents per hour.....		1,377.20
District of Columbia.....	\$3 to \$5 per diem.....	939.00	1,721.50
Department of Agriculture.....			900.00
Union rate.....	One rate, \$4 per diem.....		1,252.00

Item 81 provides an increase of \$120 for an elevator machinist, from \$900 to \$1,020. A special examination was held for this position in the spring of 1916. As the salary was low few names were

secured. The man appointed in 1916 resigned in January, 1917, to accept a position in the navy yard at a higher salary. The civil-service list in January contained but one name. This man declined, as he was receiving \$1,200 per annum as elevator inspector for the city of Philadelphia. Another special examination was held in April of this year and only two names were secured. The man appointed is an excellent mechanic and can not be held long at present salary. The union rate is \$5 per day or \$1,565 per annum. The Capitol is paying their elevator machinist \$1,800.

The CHAIRMAN. In item 82 you have a new place at \$1,100, a tinner or sheet-metal worker.

Mr. REESE. Item 82 is a new place. The one tinner's helper we now have can not carry on all the work of this kind that is needed by the department.

The CHAIRMAN. What does that man do?

Mr. REESE. The tinner or sheet-metal worker does a great deal of work in connection with model making and also in connection with the Bureau of Animal Industry and the States Relations Service. Mr. Gill can tell you more about that than I can.

The CHAIRMAN. Just give us a general statement.

Mr. REESE. He makes models, exhibit material, laboratory apparatus, dryers and cookers for the dietetic work of the States Relations Service, and experimental models for all branches of the department; in fact, all kinds of sheet-metal and tin work.

The CHAIRMAN. Have you got him named right?

Mr. REESE. What would you suggest changing it to, Mr. Chairman?

The CHAIRMAN. I do not know. It does not seem to me that the line of work performed suggests the title you have given him.

Mr. HARRISON. That is the title the Civil Service Commission carries.

The CHAIRMAN. All right.

Mr. WASON. I do not like that title for a man doing that work. Do you, Mr. Lever?

The CHAIRMAN. No; I do not.

Mr. REESE. We might call him metal worker.

Mr. WASON. He is not merely a metal worker. He is a metal worker, but his work is more in the line of fancy work.

The CHAIRMAN. If we can find a better title let us give it to him. Take up your next item.

Mr. REESE. Item 86 calls for 69 watchmen, at \$720 each, an increase of 19, all by transfer from other rolls.

The CHAIRMAN. There is no actual increase in the number of watchmen? Is it not simply an increase by transfer?

Mr. REESE. We found it necessary last spring, because of the international situation, to increase the guard on all department buildings. It was absolutely essential. We had an inadequate force. There were many doors to department buildings entirely unguarded and it was not safe. We had to put these men on. This is a proposition now to make them permanent—to transfer them from the rolls on which they have been carried temporarily to the Secretary's roll, with the usual reduction of the corresponding appropriations.

The CHAIRMAN. So that there has been an actual increase of 19 in your watchman force?

Mr. REESE. Yes; it was absolutely necessary.

The CHAIRMAN. And you took care of them temporarily through the bureaus?

Mr. REESE. Yes, sir.

The CHAIRMAN. The watchman force is concentrated in the Secretary's office?

Mr. REESE. Yes, sir; except in the Weather Bureau and Forest Service, it is all directed by the Secretary's office.

Mr. WASON. Do they work seven days or seven nights a week?

Mr. REESE. The care of the buildings is a continuous performance. It must be done all day and all night. This force works every day in the year, and, except when on annual or sick leave, the individual men work daily or nightly, with the exception of two Sundays off each month. We give them that much.

Mr. WASON. And how many hours?

Mr. REESE. The relief is eight hours. They are divided into three reliefs.

Mr. WASON. And they get \$720?

Mr. REESE. Yes, sir; they get \$720. Just at present they are getting \$6 a month more, under the 10 per cent increase law, but I should like to see every one of them raised to \$960 a year if it were possible to do it. It is an arduous, fatiguing, and responsible job. Those men save our buildings repeatedly.

Mr. WILSON. They are all colored people, I assume?

Mr. REESE. No; the majority of them are white.

Mr. WILSON. That is, the watchmen?

Mr. REESE. Yes, sir. We have a few colored men.

Mr. WASON. They work 2,728 hours a year, if I figure it right, for \$720.

Mr. REESE. It should be made clear that, like other employees, they get the 30 days' annual leave. In some cases they do not get it all. They average, I should say, not over 25 days' leave each.

Mr. HARRISON. If they are sick they get 30 days' sick leave.

The CHAIRMAN. Take up the next, No. 87, three mechanics, at \$1,200 each, a decrease of one by change to mechanical assistant at \$1,500. You have explained that?

Mr. REESE. I have explained that. That is the adjustment of one of the items already discussed.

The CHAIRMAN. Item 88 is a transfer with a corresponding reduction.

Mr. REESE. Yes, sir.

The CHAIRMAN. No. 90, three skilled laborers, at \$960 each, increase of one in lieu of one skilled laborer, \$840, as below, with increase of \$120.

Mr. REESE. Exactly the same argument applies in that case as in all these other cases.

The CHAIRMAN. All right. Take up the next.

Mr. REESE. No. 94 is another point dealt with in the letter of the Secretary of Agriculture, already referred to. Consider 94 and 96 together, if you please. The proposition is to take four of the laborers, under item 96, receiving \$480 each, and put them in the class of item 94 at \$600 each. Those men are coal passers and, like the firemen, are required to work pretty nearly every day in the year. Of course, the power plant has to be kept running every day

and every night, and the work is arduous. We have lost men and replaced them and lost them and replaced them again. It is the same story. There are two vacancies in that force now. At \$480 we can not keep them, and \$480 is really a very low salary on which to support existence at this time.

Mr. YOUNG. Are these married men, some of them?

Mr. REESE. Some of them. These \$480 men, of course, come under the 10 per cent increase provision.

Mr. YOUNG. And they work all day?

Mr. REESE. They work eight hours a day.

Mr. WILSON. Why don't you pay them more money?

Mr. REESE. We would like to.

Mr. WILSON. We would like to see them get more.

The CHAIRMAN. It is up to us.

Mr. WILSON. Let us give it to them.

Mr. WASON. I think it is a disgraceful proposition.

Mr. WILSON. I notice further down that you pay 15 charwomen \$240 a year each.

Mr. REESE. Yes, sir; but they work only a few hours a day cleaning the buildings, from 6 o'clock to 9 or 9.30, and many of them have an opportunity to work outside.

Mr. WILSON. That is less than a dollar a day.

Mr. REESE. You can not go too far in raising these low-salaried positions for me, I assure you.

Mr. WASON. Is not \$480, the amount paid these laborers under item 96, the lowest salary paid any employee in your department that you know of?

Mr. REESE. With the exception of some messenger boys who get \$30 a month, it is.

Mr. WASON. But they are not able-bodied men.

Mr. REESE. No; they are not able-bodied men. For an able-bodied man doing heavy work, \$480 is the least pay.

The CHAIRMAN. How does that compare with the salaries in the other departments for men doing the same character of work?

Mr. REESE. For coal passers, the union rate of wages is \$3 a day. The Bureau of Engraving and Printing pays them on a per diem basis. They are all per diem men, and they work every day in the year in preference, so as to get more money. In the navy yard, my last information was that they were paid \$2.32 a day, and that has probably been increased. In the National Museum the same class of service is paid \$600. In the Government Printing Office they get \$2 a day, and so it goes.

Mr. DOOLITTLE. Do any of the departments pay less than the Agricultural Department?

Mr. REESE. Not to my knowledge, although I understand some of them pay the same. All of the departments have laborers getting \$40 a month, I believe.

Mr. WASON. I would like to know in item 96 if these 23 laborers work eight hours a day, and how many days a week.

Mr. REESE. Let me explain that this total of 23 includes not only laborers but certain messenger boys. There are not 23 laborers actually doing that work.

Mr. WASON. What do the laborers get?

Mr. REESE. \$40 a month.

Mr. WASON. And the messenger boys the same?

Mr. REESE. Yes, sir.

Mr. WASON. How many hours do the laborers work?

Mr. REESE. Practically eight hours.

Mr. WASON. And how many days a week?

Mr. REESE. Seven days a week, except the Sundays that they are given off.

Mr. WASON. Two Sundays a month?

Mr. REESE. Three Sundays a month now.

Mr. WILSON. Can you separate the laborers from the messengers?

Mr. REESE. Of this total of 23, 12 are unskilled laborers and 11 are messenger boys. The four unskilled laborers specifically recommended for promotion are coal passers employed in the power house, as I have already stated. The other eight are mature men doing manual labor of various kinds.

The CHAIRMAN. Anything further?

Mr. REESE. I think that winds up everything in the Secretary's roll.

The CHAIRMAN. Any further questions, gentlemen? If not, turn to page 151, and we will take up the rent item. Mr. Reese handles that.

MISCELLANEOUS EXPENSES.

Mr. REESE. Mr. Chairman, the appropriation for miscellaneous expenses, on page 150, is also one that I usually handle.

The CHAIRMAN. Is there any increase there?

Mr. REESE. There is not, but if the committee will permit me, I wish to state here a few facts with regard to the fuel situation. Last year, under the contract with the General Supply Committee, the department got its coal at a cost of \$3.46 a ton. This year the General Supply Committee made no contract. The department is getting such fuel as it can through the fuel administration and at a total cost of \$5.93 a ton. That results in an increase of about \$18,325 over the cost of fuel last year. Congress was good enough in the last appropriation bill to give us a \$15,000 increase to provide for what we thought would be a sufficient advance, namely, \$2 a ton. The advance is \$2.47 a ton, and on that basis we shall run short about \$3,500 on the fuel fund this year, unless we are extraordinarily lucky. I venture to lay before the committee the possibility of considering an increase of this appropriation of, say, \$5,000 immediately available to make us safe. Of course, the central power plant is in one way the heart of the department. If it stops operation we are down, and no man can forecast what the fuel situation is going to be before the war is over. We may have to pay a great deal more than \$5.93 a ton.

The CHAIRMAN. The committee will consider that, Mr. Reese.

Mr. REESE. I hope the committee will give consideration to that. With that statement I have nothing else to add regarding the item for miscellaneous expenses.

RENT IN THE DISTRICT OF COLUMBIA.

The CHAIRMAN. The rent item, shown on page 151, seems to carry an increase of \$15,000.

Mr. HUTCHINSON. May I ask what kind of coal you use in the power plant?

Mr. REESE. The plant is built and adapted to use New River coal, and that is what we aim to get.

Mr. HUTCHINSON. Is that bituminous or anthracite?

Mr. REESE. Bituminous.

Mr. HUTCHINSON. You pay him?

Mr. REESE. Five dollars and ninety-three cents a ton, delivered, and last year our price was \$3.46 a ton, delivered.

The CHAIRMAN. Go ahead, Mr. Reese.

Mr. REESE. In the item for rent of buildings an increase of \$15,000 is requested. As explained in the note, the increase is desired to provide for the steady growth of the Department of Agriculture. Last year, the 1st of July, 1916, we had in Washington 3,796 employees. On the 1st of July, 1917, we had in Washington 4,316 employees, and, though I have not the figures since the 1st of July, I know that there has been an addition of perhaps 350 or 400 employees since that time. The department is crowded in almost every branch, and there are various new lines of work which must be undertaken. Particularly important is the work of the Bureau of Markets, such as the food survey and the new lines of work that were included in the legislation for warehousing, grain standardization, and so forth. The department has done its best to expend the appropriation for rent as economically as possible, using in many cases low-priced buildings which are not by any means well adapted to our purposes. The forecast, so far as any one can see, is that we shall continue to grow for some time. We ought to have a little more money to provide the additional quarters which are certain to be called for. I have made an estimate of \$15,000, which I really think a very conservative figure for the purpose. The Bureau of Chemistry is a large and growing branch, which has never had an increase in quarters to my knowledge, certainly not since I have been chief clerk. It needs more room. The States Relations Service, administering among other things the Lever Act, is a very large branch, and, although a great part of its work is in the field, of course an increase in the field necessarily means an increase in the office in Washington. The Federal Horticultural Board also needs additional space. All our present buildings are crowded, and nothing would give me greater pleasure than to take this whole committee, or any part of it, around the Department of Agriculture to see the conditions there. We ought to have some increase now, and I hope the committee will give the recommendation for an increase of \$15,000 most careful and favorable consideration.

The CHAIRMAN. Have you any space in mind that you can get?

Mr. REESE. Not at the present time.

The CHAIRMAN. If you have had the experience that I have been having, you will have a time to get it.

Mr. REESE. We will have a time to get it, I have no doubt.

Mr. WILSON. You might rent some of these apartments here.

Mr. REESE. Since I began last spring to try to locate additional space for the Department of Agriculture I have had offered to me one church, one theater, one dance hall, two hotels, and an apartment house, and I considered every one of them, but, as it happened, none of them were fit for our purposes. They were all too remote or other-

wise unsuitable. We have, however, succeeded in securing some fairly good office space at reasonable prices.

Mr. RUBEY. Do you make those leases for a term of years?

Mr. REESE. One year; that is all we can do.

Mr. RUBEY. At the end of a year, do you not have trouble in re-renting them at the same figure?

Mr. REESE. We put in the lease contract a proviso that we shall have the option of rental for four years longer.

Mr. WASON. On the same terms?

Mr. REESE. On the same terms, precisely.

Mr. RUBEY. You say for four years longer. Then you lease them for a term of five years?

Mr. REESE. No. We have merely the option of renewal. That is all we can do under the law.

The committee will notice in this paragraph the proposed omission of the language authorizing the appointment of a joint committee to look into the housing conditions of the Department of Agriculture. I suppose I need say nothing on that point. The committee is aware that there is a great public building commission operating along that line for the whole Government and it is expected to make its report not later than the 1st of January. It includes, of course, the housing conditions of the Department of Agriculture along with the other departments.

The CHAIRMAN. Is there anything further on the rent item?

Mr. REESE. I have nothing further on that.

The CHAIRMAN. If there are no questions, we are very much obliged to you, Mr. Reese.

HOUSE OF REPRESENTATIVES,
COMMITTEE ON AGRICULTURE,
Friday, December 14, 1917.

The committee met at 10.30 o'clock a. m., Hon. A. F. Lever (chairman) presiding.

OFFICE OF FARM MANAGEMENT.

The CHAIRMAN. Turn to page 17 of the Book of Estimates, and we will take up the Office of Farm Management. Mr. Thomson, I understand, is present and will present to us the estimates for that office.

STATEMENT OF MR. E. H. THOMSON, ASSISTANT CHIEF, OFFICE OF FARM MANAGEMENT, UNITED STATES DEPARTMENT OF AGRICULTURE.

Mr. THOMSON. Mr. Chairman, no increases are requested in the estimates for this year, and there are only two changes that I wish to call to your attention, as printed in the Book of Estimates. On page 18, item 10, "one clerk or photographer," we would suggest that that be changed to "one clerk or draftsman"; that the word "photographer" be changed to "draftsman."

The CHAIRMAN. You suggest a change in the title?

Mr. THOMSON. A change in the title.

The CHAIRMAN. Just make it "one clerk"?

Mr. THOMSON. "One clerk or draftsman." Then, in item 14, same page, we would suggest in place of "three clerks or map tracers, at \$720 each," "two clerks, at \$1,080 each." That adjustment will not change the total amount; it involves no increase. The reason for this is that it is very difficult—in fact, next to impossible—to secure clerical employees at \$720, and for the good of the service we believe that it would be better to have two clerks at \$1,080 each than three at the lower salary, even if we could get the latter, and that this readjustment will better meet the needs of our work.

These changes have been approved by the Secretary of Agriculture, and a letter containing his recommendations has been prepared, and I will have it inserted in the record.

(The letter referred to follows:)

WASHINGTON, D. C., December 14, 1917.

Hon. A. F. LEVER,

Chairman, Committee on Agriculture, House of Representatives.

DEAR MR. LEVER: In connection with the estimates of the Office of Farm Management for next year, I desire to suggest that the following additional changes in the statutory roll be made:

On page 18 of the committee print of the estimates, item 10, change "one clerk or photographer at \$1,020" to "one clerk or draftsman" at the same salary. This change is suggested for the reason that the services of a draftsman are in greater demand at the present time than those of a photographer.

In item 14, on the same page, change "three clerks or map tracers, at \$720 each," to "two clerks, at \$1,080 each," and then combine item 14 with item 9, so that the latter will read "four clerks, at \$1,080 each." This adjustment will involve no increase in the total appropriation and is recommended in view of the inability to secure competent clerical help at \$720. If the two additional places at \$1,080 are allowed by the committee it is proposed to fill them by original appointments.

Very truly yours,

D. F. HOUSTON, *Secretary.*

The CHAIRMAN. What about item 9, two clerks at \$1,080 each, increases of one in lieu of one lantern-slide colorist \$720 and one laborer \$360, dropped? You drop two low-grade men and replace them with one at \$1,080?

Mr. THOMSON. Yes; we change the item by dropping one at \$720 and one at \$360 and adding one at \$1,080, making the item two each instead of one at \$1,080. This change will involve no increase in the total appropriation.

The CHAIRMAN. And you do that on the theory that you can not get clerks to accept these low-grade places?

Mr. THOMSON. Yes.

The CHAIRMAN. Is there anything else in the statutory roll that needs discussion?

Mr. THOMSON. Nothing else.

The CHAIRMAN. All of these transfers that you have made are at the same salaries and the lump fund is reduced?

Mr. THOMSON. The lump fund is reduced accordingly.

The CHAIRMAN. Any questions, gentlemen? If not, we will take up very briefly your item 29. There seems to be an apparent increase of \$15,000 due to transfers, but there is really no change in that lump-fund appropriation?

Mr. THOMSON. No change.

The CHAIRMAN. Mr. Thomson, have you anything out of the way to report as to your work during the year?

Mr. THOMSON. To state it very briefly, Mr. Lever, I would say that, with the very abnormal conditions on account of the war, our office has been called upon to rearrange its activities somewhat, and, as we see the problem now, it is to help the farmer to carry on a bigger business, grow larger and better crops, and keep as much or more live stock, and all with decreased facilities. He has less help at hand, less equipment, less fertilizer materials, and a great many other restrictions, and yet he is called upon to do more. To sum up the situation, we might say that we aim to help the farmer to make himself and his business more efficient by suggesting better business methods and the more efficient use of teams and labor, all tending toward greater farm efficiency. We have given increased attention to this phase of the work, dropping all of those lines of activity—I will not say dropping, but rather deferring them—which are not absolutely essential at this crisis. That, in a measure, sums up our activities.

Mr. DOOLITTLE. Mr. Chairman, one question.

The CHAIRMAN. Very well.

Mr. DOOLITTLE. Does the question of the efficiency of farm tractors as compared with teams of horses come under your supervision or inspection?

Mr. THOMSON. Yes; we have been keeping very close watch on that question.

Mr. DOOLITTLE. Have you reached a conclusion as to the advisability of substituting tractors for horses in general farm work?

Mr. THOMSON. I would not say in general. The answer depends entirely upon the particular farm and farmer concerned. A tractor may be a very good investment on one farm where there is a sufficient acreage of crops, where the help is scarce, and where conditions are suitable for its use.

Mr. DOOLITTLE. Have you reached a conclusion as to how much acreage there must be before a tractor would be preferable to horse-drawn machinery?

Mr. THOMSON. Again I believe that depends entirely upon the variations of labor and more particularly upon the type of farming followed. If there is a great deal of plowing or tillage work to be carried on, the tractor might be used to great advantage on one 160-acre farm, whereas on another 160-acre farm it might not pay at all.

Mr. DOOLITTLE. As to farm labor, is not that almost extinct? I refer now to the hired man on the farm that we used to hear so much about?

Mr. THOMSON. The farm-labor problem is serious. I would not say it is acute. We are in pretty close touch with the situation in every State. The greatest shortage in farm labor is with reference to the experienced farm workman—not the unskilled farm laborers, not the help that can be taken out to harvest a particular crop.

Mr. DOOLITTLE. You mean from the towns and cities?

Mr. THOMSON. Yes.

Mr. DOOLITTLE. As a matter of fact, they are not much good, are they—these fellows that come from the cities and go right out on the farm for a few days or a few weeks?

Mr. THOMSON. No; not without a little bit of training and experience. They are not satisfactory, as a general rule, but the farmer is more willing to put up with inexperienced help than formerly,

and I think the situation is going along all right in that respect. But the regular hired men and the farmers' sons who have been on the farms 365 days in the year—the real farm workers—where one of those leaves the farm, then that causes a serious question to that particular farmer, and that seems to be where the greatest concern is being felt.

Mr. LESHER. Up in our section we go into the commercial establishments and ask the managers to lay off such of their men as have had experience in farming for two or three weeks, and these men have been going out to help the farmers. It is a great help just to get the men working in these shops who have had experience in farming. I had them for three weeks in harvest and in corn-husking time, and they seemed to be very willing and ready to cooperate.

Mr. RUBEY. You paid them the same amount that they were receiving in the shops?

Mr. LESHER. Practically so, but not altogether, because these men who have been working in the towns are very glad to get out on the farms for a short time. They consider it a vacation. You can get very good men in that way, and they have been helping us out wonderfully.

The CHAIRMAN. I do not suppose you care to discuss under this item what you have been doing under the other act, the emergency act?

Mr. THOMSON. The only work we have been doing with the funds from that act has been addressed to this farm-help question.

The CHAIRMAN. I guess we had better defer discussion of that, because I understand the Secretary's policy is to estimate in a separate bill.

Mr. HARRISON. Yes, sir; that will be presented separately. These estimates represent undertakings which ought to be carried on irrespective of whether or not we are at war.

The CHAIRMAN. I presume we had better keep that separate.

Mr. HARRISON. In January or February we will know more definitely what our needs for the emergency activities will be next year.

The CHAIRMAN. Anything further, gentlemen? Mr. Thomson, is there anything further you desire to say?

Mr. THOMSON. I believe not. The field has been pretty well covered in other years, and, as I say, we have just redirected our activities to meet the present-day needs.

The CHAIRMAN. If you desire to elaborate your statement, Mr. Thomson, within the bounds of reason, I think the committee would be very glad to have you do it, discussing a little bit more in detail the lines of activities that you have been pursuing in the last year and which you hope to pursue in the coming year.

Mr. DOOLITTLE. In correcting the notes?

The CHAIRMAN. In correcting the notes.

Mr. THOMSON. I will do that in correcting my notes.

The CHAIRMAN. I would not make it very long. All right, thank you.

(The statement referred to follows:)

SUMMARY OF THE PRINCIPAL ACTIVITIES OF THE OFFICE OF FARM MANAGEMENT.

The activities of the Office of Farm Management deal almost entirely with the farm from a business standpoint. On account of the very abnormal conditions

arising out of the present emergency much of the work of the office has been re-directed along lines to meet the situation in so far as possible. The farmer has been called upon to use every resource to increase his output, which meant increasing his efficiency in every way possible.

It has been shown that some farmers have worked out much more efficient practices than others in the growing of a crop. In the present emergency it is imperative that only the very best and most efficient practices be followed, particularly in the production of our most important crops. Such crops as sugar beets, potatoes, corn, wheat, and cotton have been studied with reference to the best farm practices prevailing in a particular district, that is, those methods which enabled the farmer to maintain a maximum production with the least expenditure of labor and funds.

Again, in the case of live stock the problem of an adequate supply of roughage and concentrates has been of paramount importance. Studies have been made of those systems of farming which yield the largest production of feeds for live stock, especially roughage, thus releasing as much as possible of the grains for human food. For instance, with the abnormal scarcity of concentrated grains certain dairymen have been found who met the situation and maintained a normal supply of milk through the use of alfalfa and corn silage. By such a practice the supply of one of the most important food products was maintained on these farms by following a system of farming which in a large measure was self-sustaining. In the case of hogs, our most important food animal, attention has been directed to the study of those farms following hog production through the use of alfalfa, pasture, and other such crops and with the minimum use of corn. Those farm-practice studies which have been found to be the most efficient and practicable in the present emergency have been described in bulletins, and information has been furnished the farmers through the various agencies of the States Relations Service.

The work on such projects as farm bookkeeping and accounting, farm tenantry, analysis of the farm business, and cost of operating farms have all been continued in so far as they were vital to the present crisis.

Attention has been given to the question of farm equipment with reference to its practicability and use, a problem of increasing importance. This work includes studies on the economics of the farm tractor to determine under what conditions its use is practicable.

Shortly after the United States was brought into the war the handling of the farm-labor problem was assigned to the office of farm management in cooperation with the United States Department of Labor. To meet this situation a farm-help representative has been placed in each State to assist in organizing the agencies within the State to deal with this problem and to work in cooperation with the State councils of defense, State agricultural colleges, and other State organizations, including committees on production and conservation. In this way the labor needs of the farmer have been ascertained and a very close watch kept on this most important subject. In view of the time at which war was declared, the problem of perfecting a system of supplying labor for plowing and planting was very difficult. However, at this date a very complete organization, in cooperation with State agencies, has been formed, and these united agencies, with the experience of last season, should render very effective service this coming season.

The following figures show the allotments under the lump-fund appropriation by principal projects during the current fiscal year and the estimated expenditures during the fiscal year 1919:

	1918.	1919.
Administration, including general direction of the various lines of work of the office and the routine activities in connection with the accounting, recording, editorial, and other administrative work-----	\$8,060	\$4,100
Investigations in farm economics (investigations of crop economics, live-stock economics, and farm tenure)-----	57,561	53,965
Investigations in farm organization (farm surveys, farm machinery and equipment, cooperative farm-management investigations, and specific organization problems)-----	138,877	131,093
Investigations in special farm-management and farm-practice problems (history and distribution of farm enterprises, farm practice and crop yields, farm bookkeeping and cost accounting)-----	32,882	32,502
Total-----	237,380	221,66

A list of some of the more important publications emanating from this office which have been issued during the past year, as well as those now in press, is appended.

DEPARTMENT BULLETINS.¹

- Seasonal distribution of farm labor in Chester County, Pa. (Billings.)
- Farming in the Bluegrass region. (Arnold.)
- Economic study of farming in the cotton belt. (Dixon.)
- The business of 10 dairy farms in the Bluegrass region of Kentucky. (Arnold.)
- Validity of the survey methods of research. (Spillman.)
- The cost of producing apples in western Colorado. (Miller and Thomson.)
- The theory of correlation as applied to farm-survey data on fattening baby beef. (Tolley.)
- A study in the cost of producing milk on four dairy farms located in Wisconsin, Michigan, Pennsylvania, and North Carolina. (Cooper, Bennett, and Church.)
- Cost of keeping farm horses and cost of horse labor. (Cooper.)
- The economic winter feeding of beef cows in the corn belt. (Cotton and Spillman.)
- The cost of producing apples in Hood River Valley. (Thomson and Miller.)
- The cost of producing apples in Wenatchee Valley, Wash. (Miller and Thomson.)

FARMERS' BULLETINS.¹

- How live stock is handled in the Bluegrass region of Kentucky. (Arnold.)
- The use of a diary for farm accounts. (Thomson.)
- Saving labor with the sweep-rake. (Yerkes and McClure.)
- Minor articles of farm equipment. (Humphrey and Yerkes.)
- Human food from an acre of staple farm products. (Cooper and Spillman.)

CIRCULAR.¹

- The influence of relative area in intertilled and other classes of crops on crop yield. (Brodie.)

YEARBOOK ARTICLE.¹

- Farm tenantry in the United States. (Spillman and Goldenweiser.)

BULLETINS NOW IN PRESS.

- A study of share-rented dairy farms in King County, Ill., and Green County, Wis. (Boeger.)
- A brief history of the sheep industry in the United States. (Connor.)
- Farm management and farm profits in Provo Area, Utah Lake Valley. (Connor.)
- Geography of the world's agriculture. (Finch.)
- Cropping systems for the moisture portion of eastern Washington and Oregon and northern Idaho. (Fluharty.)
- Value of a small plot of ground to the laboring man. (Funk.)
- Pasture land in the United States. (Goldenweiser and Ball.)
- A farm management survey in Brooks County, Ga. (Haskell.)
- A study of haymaking crews and labor costs. (McClure.)
- Cost of producing hay in Steuben County, N. Y., and Washington County, Pa. (McClure.)
- Cost of producing apples in Yakima Valley, Wash. (Miller.)
- A simple way to increase crop yields. (Miller.)
- Economy in the selection of feeds. (Rundles.)
- A farm-management study in Anderson County, S. C. (Smith.)
- Factors of successful farming in the vicinity of Monett, Mo. (Spillman.)
- Cost of producing apples in the Payette Valley, Idaho. (Thomson and Miller.)
- Fire prevention and fire extinction on the farm. (Tolley.)
- Cost of harvesting wheat by different methods. (Yerkes and Church.)

¹ Published during the past year.

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

WEATHER BUREAU

THURSDAY, DECEMBER 13, 1917



WASHINGTON
GOVERNMENT PRINTING OFFICE
1917

AGRICULTURE APPROPRIATION BILL.

HOUSE OF REPRESENTATIVES,
COMMITTEE ON AGRICULTURE,
Thursday, December 13, 1917.

WEATHER BUREAU.

STATEMENT OF MR. C. F. MARVIN, CHIEF OF THE WEATHER BUREAU, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. We will take up the Weather Bureau. Prof. Marvin is present. The estimates begin on page 21.

In your statutory roll, Prof. Marvin, you seem to have only one change, and that is in line 24, where there appears to be a change of title.

Mr. MARVIN. Yes, sir.

The CHAIRMAN. One instrument maker, instead of one chief instrument maker?

Mr. MARVIN. Yes, sir. The title "chief instrument maker" is no longer appropriate to the conditions of doing the work. The man in charge of the shop is a specialist in meteorological instruments and is not carried as an instrument maker. This title has been carried on the roll for a good many years and suited former but not present conditions. We simply wish to drop the word "chief," and make the title instrument maker. There is no change in salary or personnel.

The CHAIRMAN. The next item is, on page 22, one instrument maker, by transfer from lump fund for aerological stations, Army appropriation act, \$1,260.

Mr. MARVIN. In the Army appropriation act for 1918, \$100,000 was provided for the establishment and maintenance of aerological stations for investigations to be conducted under the direction of the Secretary of Agriculture. We provide here for the transfer of the item for aerological work to the Agricultural bill. From that appropriation we employed an instrument maker on the lump-sum roll, but according to the law we must carry him on the statutory roll, and the estimates submitted here provide for his transfer to the statutory roll, with corresponding reduction in the lump sum.

The CHAIRMAN. If this work is transferred?

Mr. MARVIN. If the work is transferred; yes, sir. The appropriation itself will come up for discussion later.

The CHAIRMAN. All right.

Mr. MARVIN. There is no other change on that page until you come to item 44. There we are asking for a change in the provisions for messengers in the Weather Bureau. This matter has been up on other occasions. We have two low grades of messengers, at \$360 and \$480. For several years past we have found it very difficult to

get satisfactory messengers at \$360, and especially so at the present time. The boys take the places and resign in a short time to get better pay elsewhere. We can not get the kind of boys we require. This change proposes the dropping of the entire number of \$360 messengers and \$450 messengers and the substitution in their place of such a number of \$480 messengers as will not require an increase in the appropriation. That means 35 messengers at \$480, and the appropriation is actually decreased by \$210. We lose 11 messengers by the change.

Mr. WILSON. Why do you need so many messengers in the service?

Mr. MARVIN. The number seems large, but they are scattered all over the country. We have 200 stations, and most of the messengers are on duty outside of Washington.

Mr. WILSON. I see.

Mr. MARVIN. Most of these boys are at the city stations throughout the country.

The CHAIRMAN. Do you happen to know how many are stationed in Washington? I think I have asked you that question before.

Mr. MARVIN. I can not give from memory the exact number at the Washington office, but all of these \$360 and most of the \$480 messengers are in the field. The five \$450 messengers and some of the messengers at the higher salaries are in Washington, a few of them only.

The CHAIRMAN. If you can put that in the record I wish you would, please.

(The statement referred to follows:)

Statement showing messengers, messenger boys, and laborers on duty in the Weather Bureau in and out of Washington, D. C.

Appropriation, statutory salaries, Weather Bureau, 1918.	In-Washington assignments.			Out-of-Washington assignments.		
	Messen- gers.	Messen- ger boys.	La- borers.	Messen- gers.	Messen- ger boys.	La- borers.
18 messengers, messenger boys, or laborers, at \$720 each.....			6	8	3	1
6 messengers, messenger boys, or laborers, at \$660 each.....		1	5			
31 messengers, messenger boys, or laborers, at \$600 each.....		7	4		18	2
64 messengers, messenger boys, or laborers, at \$480 each.....		5	12		51	2
5 messengers, messenger boys, or laborers, at \$450 each.....		14				
4 messengers, messenger boys, or laborers, at \$360 each.....				2		
37 messenger boys, at \$360 each.....					35	
Total.....		18	16	10	107	5

¹ 1 vacancy.
² 2 vacancies.

³ 3 vacancies.
⁴ 2 vacancies.

NOTE.—In addition to the 9 vacancies in the \$480, \$450, and \$360 grades, 36 of the present incumbents are temporary appointees because of lack of civil-service eligibles.

Mr. MARVIN. The changes on page 23 are simply carrying out that scheme of dropping five messenger boys at \$450, and four messenger boys or laborers at \$360, and 37 messenger boys at \$360 each. Those are dropped, and we will take in their place 35 messengers at \$480,

which will require \$210 less total salary. It will require us to conduct the work with a less number of men, but vacancies constantly exist in that roll. There are a number of vacancies at the present time which can not be filled. It is believed the change will permit the employment and retention of a better class of messengers and in the end promote efficiency in the conduct of our work.

The CHAIRMAN. Item 51, on page 24, for necessary expenses in the city of Washington; there is no increase there.

Mr. MARVIN. There is no change in that item, Mr. Chairman.

The CHAIRMAN. Is there any change in the general line of work under that item?

Mr. MARVIN. The work conducted in the city of Washington is practically the same as heretofore. There are some changes in the aerological work, but that does not come out of this appropriation at the present time.

The CHAIRMAN. Item 52, for the maintenance of the printing office in the city of Washington.

Mr. MARVIN. That appropriation is also the same; there is no change.

The CHAIRMAN. Item 53.

Mr. MARVIN. That is for the expenditures out of Washington. There is a reduction in that fund of \$5,000. Apparently there is an increase of \$1,500, but that comes about in this way: A separate item of appropriation of \$6,500 was made last year for the establishment of a station at Greenville, S. C. That appropriation was made especially for that station. The station has been established, is now in operation and rendering reports, and we desire to transfer that sum of \$6,500 to this out-of-Washington fund, because the new station is now just like any of the other stations of the service, and the sum allotted to its maintenance is transferred in amounts, \$3,000 for salary, \$1,000 for telegraphing and telephoning, and \$2,500 for general supplies and equipment. That would add to the general field fund \$6,500, which is the same as the appropriation for the Greenville station under the present act. However, the apparent increase of \$6,500 is offset by a reduction of \$5,000 in the amount for frost-protection investigations.

The CHAIRMAN. Now, is it possible to make that reduction? Have you improved your methods?

Mr. MARVIN. An appropriation for the frost-protection investigations was made last year in the amount of \$10,000, for the investigation of methods of protection of orchards by artificial heating and otherwise. We have started this study and it includes investigations carried on in orchards in the West and in various other parts of the country. I have a chart here which shows where the work is being done. This particular part of the work consist of studying the methods of protection. It is not a forecasting proposition, but it is a study of methods of artificially protecting orchards from frost, when the temperatures are below freezing, by means of fires throughout the orchards. The condition of the oil supply and the economic difficulties of applying these protective methods have become such as to make the present time inopportune for conducting this investigation, and we feel justified in curtailing it. We are now carrying on the work throughout the country and will continue it during the next year with the \$5,000 which is asked for here, hoping to terminate this

special feature of the investigation. I would like to have it clearly understood that this is not the service of forecasting frosts and giving warnings to the people, but it is an investigation of the efficiency of the methods of protection against frosts, with a view to determine how much we can heat an orchard artificially when a cold wave is advancing, how much oil is going to be required to do that, and whether it is possible, when the temperature threatens to go to 20°, for example, to sufficiently heat the orchard to protect the crop or the fruit. If it has proved to be impossible to heat the orchard when we anticipate a minimum temperature of 20°, we want to tell the orchardist that and not have him expend labor and fuel to get protection when it is impossible. That is the object of this particular investigation. We are now asking for \$5,000 to continue that line, instead of the \$10,000 allotted last year.

Mr. WASON. Your investigation relates entirely to heat, does it?

Mr. MARVIN. Any methods; but the most successful method at present appears to be artificial heating by burning fuel, wood, oil—more particularly oil—in pots scattered around over the orchard, so many to the acre.

Mr. WASON. Have you made any experiments with what are sometimes called smudge fires?

Mr. MARVIN. The smudge is included in this burning of any character. The fires make smoke, of course, but our inquiries so far incline us to the opinion that the smudge is not the effective feature of protection, but that it is the actual heat which is imparted to the lower strata of the atmosphere at the time. The theory of the smudge is that on clear nights the surface of the earth is losing heat rapidly by radiation to the sky. If we can create an artificial cloud, the loss of heat will be diminished. That is true, but we need more than that. The atmosphere needs to be heated, otherwise the temperature will go below the freezing point and injure the fruit. So that the smudge is not so effective as the heat itself.

Mr. OVERMYER. Your work in forecasting these temperatures will go on just the same?

Mr. MARVIN. Yes; the warnings will be sent out to orchardists throughout the country just as before. This does not curtail that work or affect it in any way.

The CHAIRMAN. I think probably we can complete your statement if we hurry along. Item 56, on page 28, for the establishment and maintenance by the Weather Bureau of additional aerological stations, for observing, measuring, and investigating atmospheric phenomenon in the aid of aeronautics, including salaries, travel, and other expenses in the city of Washington and elsewhere. That seems to be a transfer from the Army appropriation bill.

Mr. MARVIN. There is a little history back of that. More than a year ago the National Advisory Committee for Aeronautics addressed a letter to the Secretary of Agriculture referring to the rapid development of aerial navigation and asked whether the department could not engage in upper-air work in aid of aviation. Growing out of that correspondence, an estimate was prepared by the National Advisory Committee for Aeronautics. This is a committee created by Congress in 1913, before the war started. An estimate was submitted by that committee to Congress for an appropriation for this aerological work. Congress adjourned without action on

the estimate, but in the special session of Congress which convened subsequently the matter was brought up again and the appropriation was passed in the Army act. It is found on page 5 of the printed bill, under the Signal Corps, exactly the language which you have here, the money to be expended under the direction of the Secretary of Agriculture.

The purpose of this appropriation is this: The world is witnessing the development of an entirely new field of navigation, aerial navigation, and it is most important, obviously, that we have the fullest possible knowledge of the currents and conditions of the free air. The Weather Bureau heretofore has had one station at which upper-air observations have been made for a few years. The result of those observations are very valuable in this connection. This appropriation is to provide for additional aerological stations. We are preparing now to establish five additional stations out of this fund at the present time. One is nearly completed and in operation, and orders are out and contracts are made for supplies for the remaining five. This work is being conducted so as to be applicable to the aviation camps for training aviators throughout the country under the Navy and the War Departments. In addition to this development of aerological work directly by the Weather Bureau under this appropriation, I might say that the bureau is cooperating with the Army, through the Signal Corps chiefly, in carrying on some work in France. It does not come out of this appropriation, but I merely mention it to show the magnitude of the work. We have supplied a number of Weather Bureau employees to the Army forces that are to go abroad and conduct meteorological and aerological investigations. The observations consist of measuring the temperature by means of kites and balloons in the free air and determining the motions and currents of the free air by observation of what we call pilot balloons—small rubber balloons inflated with hydrogen. They are released and observed by means of two theodolites, and the motion of the balloons in the air enables us to determine the various directions and force of the currents. The transfer of this appropriation to the Weather Bureau is for the purpose of enabling us to continue the work properly. The item was inserted in the Army bill only because of necessity at the time. The Weather Bureau is recognized as the agency of the Government to do this work. The work is purely meteorological and is work that the War Department and the Navy Department desire us to do. It comes entirely within the domain of the Weather Bureau work as defined in the organic act. Furthermore, it seems perfectly proper that this appropriation should now be included in the present Agricultural appropriation bill rather than to hope to continue the work or possibly have it fail by omitting it from here and securing an appropriation in some other bill.

By its organic act many and varied duties are imposed upon the Weather Bureau, all of a distinctly meteorological and atmospheric character, and all representing a highly important service to the Nation. Many of these are most distinctly and directly of great agricultural value. However, other lines of its necessary work, in the interest of commerce and navigation particularly, are not agricultural, but Congress has made the Weather Bureau a part of the Department of Agriculture and responsible for such work, and ob-

viously the funds for all its activities should be in one appropriation. The enormous expansion of aeronautics makes it extremely important that the Weather Bureau have the appropriation requested to extend its investigations and observations into the upper regions of the atmosphere, as the knowledge thus to be gained is of vital consequence in the development of the art of aerial navigation, as well as in the conservation of valuable property and of the lives of those who engage in this new field of navigation.

I do not know that I can say, briefly, any more than I have concerning the work, but I shall be very glad to answer questions.

The CHAIRMAN. This transfer is satisfactory to the War Department and the Navy Department?

Mr. MARVIN. Yes, sir; and to the National Advisory Committee for Aeronautics.

Mr. HARRISON. And the Aircraft Production Board.

Mr. MARVIN. The matter comes indirectly within the work of the Aircraft Production Board, but I do not know that they have objection to it.

Mr. HARRISON. The Secretary discussed it with them.

Mr. MARVIN. I am glad to know that is true. The Weather Bureau is the only logical bureau of the Government to do this work. As is well known, aviation has developed tremendously, and the immense appropriation that Congress has made for the production of aircraft is going to advance the art very much, and it is impossible to think of aerial navigation without a full knowledge of the currents of the atmosphere. You know, perhaps, that it is almost impossible to navigate the air any distance without being able to see the earth under you all the time in order to know where you are going. A ship navigates the sea with slight concern about the currents of the ocean because of their slow speed. When you navigate aircraft the air may be moving as fast as your airship, and you do not know what its direction is except when you can see the earth. The aviator can not tell in what direction the air is moving. He drifts with the current, and if he can not see the earth below him he does not know where he is. We must be able to chart the free air motions as fully as possible.

Mr. YOUNG. I was reading the other day of an aviator whose watch fell out of his pocket, and that was the first notion he had of his direction. Do you think that is possible?

Mr. MARVIN. When they are in a cloud they are unconscious of turning to the right or left or up or down. They may become tipped even to the point of turning over. An aviator has big straps over his shoulders to keep him in his car if he is upside down, and he would not fall out, but a watch might do so. It is quite within the range of possibility that such a thing as you describe might occur. I have been told that passing through a cloud an aviator has looked out to see the earth and he finds it over here [indicating] far to one side, because he unconsciously became tilted.

The CHAIRMAN. Your present station is located in Nebraska?

Mr. MARVIN. We have one station near Omaha, at Drexel, Nebr., and another at Ellendale, in North Dakota. We are locating one in Indiana, one in Oklahoma, and one in the East at Langley Field, the aircraft station of the War Department.

The CHAIRMAN. Take up your next item, No. 57.

Mr. MARVIN. The Weather Bureau, as you are aware, has a number of coastal telegraph lines. There is one running from Norfolk to Cape Hatteras on the Atlantic coast, one from Key West to Sand Key, one about the mouth of the Columbia River, and one from Tatoosh Island to Port Angeles, in Washington. In the maintenance of these and some other lines we have been called upon during the past few years to make various repairs and the supply of the surplus cable has become exhausted, so that, if these telegraph lines or cables—this is particularly for cables—become interrupted in the next year, there is bound to be very great delay in getting cable and material for repairs. We are asking here for an appropriation of \$25,000 for the purchase of surplus cable to have on hand to make such repairs to the lines as may be needed. The lines themselves are of added importance to the coastal patrol at the present time.

We are working hand in hand with the Navy Department, the coast patrol, and the Coast Guard service on these lines. The station at Cape Henry is reporting the vessels that pass out and in the cape, and this now is being done secretly; that is to say, the reports of these vessels are not published as formerly, but they are furnished to the military authorities and to the immediate owners of the vessels. The whole coast line from Norfolk down to Hatteras is very important, and the only one means of communication along that coast is the Weather Bureau telegraph and cable lines. Two or three short pieces of cable across the inlets constitute the only connection. The Coast Guard has some telephone lines, but they depend upon us for the cross connection. The cable across the mouth of the Columbia River has given us a great deal of trouble on the Pacific coast. It is subject to strong tidal currents. We made expensive repairs last year and for that purpose had to buy some cable from the Signal Corps. I cite this as showing the necessity for adopting precautionary measures to safeguard our communications.

The CHAIRMAN. Any questions, gentlemen? Except for these two items, 56 and 57, your estimates practically are the same as for the current year?

Mr. MARVIN. Yes, sir. We ventured to make no material changes in the estimates.

The CHAIRMAN. And the character of your work for the coming fiscal year, I take it, will be about what it has been heretofore?

Mr. MARVIN. We are trying to keep up the work the best we can with the funds we have despite the increased cost of everything, but we have been obliged to make some curtailments in the service, which we believe will not materially impair the work. The changes are in the methods of disseminations of information. Some of the station-maps we are planning to reduce in size or to substitute for them a bulletin form which does not take quite so big a piece of paper, and so on. We are making those reductions in the work to meet the increased cost that we must pay for the materials and other things that we require.

The CHAIRMAN. Has your service been crippled at all by the fact that some of your scientists have gone to the front?

Mr. MARVIN. We have suffered very severely on that account in various ways. We have given the services of two majors, two lieutenants, one captain is now going, and the military authorities are now seeking another. In addition, we have lost 50 or 60 through

the draft. We have experienced great difficulty in replacing these men because, in the first place, meteorologists or men trained in meteorology are very hard to get. The Civil Service Commission held two examinations last spring, one for assistant observers and another for higher-grade men. We got three certificates from the higher-grade examination and about 20 or 30 from the assistant-observers examination. Only 11 men in the assistant-observer grade would accept, and we have had only one man to accept the meteorological grade. We have had to fill vacancies by the temporary appointment of such men in the field as we could pick up, but they are untrained men. Those are the difficulties we have experienced in keeping up the personnel.

The CHAIRMAN. Is there anything further you wish to bring to the attention of the committee?

Mr. MARVIN. I think not, Mr. Chairman, other than to urge the estimates as they stand. I hope they will receive your favorable consideration.

Mr. WASON. I would like to ask a question. In the estimates already discussed I notice some laborers at \$480 per annum? Are you in the same situation?

Mr. MARVIN. Yes, sir. Aside from the messenger, we have laborers in the city of Washington, the same as Mr. Reese spoke of. Most of the messengers are in the field, but we have some laborers of the same class as those already discussed.

Mr. YOUNG. Are any of them married men?

Mr. MARVIN. Yes, sir.

Mr. WASON. Have you any idea how they can live on \$480?

Mr. MARVIN. The difficulty of living on inadequate salaries is not confined to that grade only.

Mr. WASON. That is one of the most glaring items that has come to my attention.

Mr. MARVIN. I can not understand how they can survive, and I do not understand how some of the men in charge of our Weather Bureau stations in the field manage to exist. They are obliged to keep up a better appearance than laborers. They are required to be with representative citizens and all that, yet their salaries are barely living possibilities—\$900 to \$1,200 a year.

Mr. WASON. You know \$1,000 in many localities in the country would be much better than \$2,000 in Washington.

The CHAIRMAN. If there are no further questions, the committee will take a recess until 10.30 to-morrow morning.

SUMMARY OF THE PRINCIPAL ACTIVITIES OF THE WEATHER BUREAU.

EXPENSES IN THE CITY OF WASHINGTON.

All of the expenses for the Weather Bureau in the city of Washington except statutory salaries, printing, and traveling expenses, and the expenses for the administration and supervision of the additional aerological stations provided for under the Army aerological appropriation, are paid from this fund. The principal projects are as follows:

(1) *General administration.*—The administration of the central office in Washington and of the various stations out of Washington, the supervision of the collection and dissemination of climatological, meteorological, and marine information, at the Washington station and in the field, and the supervision of the various scientific activities both in and out of Washington, are included under general administration. The estimated expenditure for 1919 is \$30,690, the same as the allotment for the present fiscal year.

(2) *The collection and dissemination of climatological, meteorological, and marine information.*—The collection by telegraph at least twice daily of meteorological observations taken at the various regular and special stations outside of Washington, the preparation of charts, and the issuing of weather forecasts, and hurricane, storm, cold-wave, snow, sleet, and flood warnings for a district comprising 24 States, the Great Lakes, the Atlantic coast, West Indies, and the east Gulf coast; the assembling, checking, and the compiling of meteorological observations from the 202 regular stations and about 5,000 special and cooperative stations, and the furnishing of this information to the varied interests of the country that require weather data. During the crop-growing season, special weather reports are secured from the cotton, corn, wheat, sugar, rice, and other staple crop-growing regions and disseminated weekly by telegraph and in the form of bulletins for the benefit of the growers and others interested in current crop conditions. The estimated expenditure for 1919 is \$55,660, being the same as the allotment for the present fiscal year.

(3) *Scientific activities.*—The improvement of instruments and instrumental equipment that are required in the taking and recording of the various meteorological elements with which the bureau is concerned, investigations of the problems of forecasting, river and flood investigations, investigations in climatology, aerological investigations, solar-radiation investigations, evaporation investigations, meteorological investigations, seismological investigations, weather and plant relation investigations, and ice-storm and sleet investigations are the various lines of scientific research being conducted at the Washington station. The estimated expenditure for 1919 is \$22,900, being the same as the allotment for the present fiscal year.

The total of this subappropriation "Expenses in the city of Washington" is \$109,250 for the present fiscal year, and there is no increase in the estimated amount submitted for 1919.

MAINTENANCE OF PRINTING OFFICE IN THE CITY OF WASHINGTON.

This office is maintained for the prompt issuance of weather maps, bulletins, forecast cards, forms, instructions, etc., which, on account of the necessity for immediate distribution, can not be printed at the Government Printing Office without impairing the service of the bureau.

The total of this subappropriation is \$12,800 for the present fiscal year, and there is no increase in the estimated amount submitted for 1919.

EXPENSES OUTSIDE OF WASHINGTON.

The expenses necessary for the maintenance and operation of 202 principal stations and their coordinated and related substations, about 5,000 in number, including rent of offices, repair and maintenance of buildings, supplies, salaries of the scientific force, and all other expenses, except the salaries of printers, messengers, laborers, and repairmen, and traveling expenses, are paid from this item. The principal projects are as follows:

(1) *"Forecast and warnings"* involves the collection of meteorological information and the making of weather forecasts and the issuance of warnings, storms, cold waves, and frosts, for the benefit of navigation, manufacture, commerce, and agriculture, and of wind forecasts in connection with forest-fire prevention. This information is disseminated by means of weather maps, bulletins, cards, telegraph, telephone, newspapers, flag and light signals, and by other special means. The allotment for 1918 for this project is \$723,360, and the estimated amount for 1919 is \$724,860, an increase of \$1,500.

(2) *River and flood forecasts.*—This project includes the gauging of rivers and the issuing of forecasts of river stages and flood warnings. The allotment for 1918 is \$159,210; there is no increase in the amount estimated for 1919.

(3) *Agricultural work.*—During the crop-growing season special reports of the weather are secured daily by telegraph from the corn, wheat, cotton, tobacco, truck, cattle, and fruit sections of the country, and the information is disseminated for the benefit of the growers and others interested in the products. The allotment for 1918 is \$67,150, and the estimated amount for 1919 is the same.

(4) *Climatological work.*—This work consists of the collection and tabulation of meteorological information for the purpose of establishing the climatology of all portions of the United States and its possessions. The allotment for 1918 is \$314,520. The estimated amount for 1919 is the same.

(5) *Vessel reporting*.—This work consists in the collection and transmission of marine intelligence for the benefit of commerce and navigation and for the national defense. The estimated amount for 1918 is \$2,350; there will be no increase in the amount for 1919.

(6) *Research work*.—Investigations are carried on for the purpose of increasing forecasting knowledge and for determining relationship between the weather that has occurred and future crop production and other features of agricultural meteorology. Accurate measurements are made of the heat continuously received from the sun and its effects upon meteorological elements. Investigations of upper-air conditions are made by means of kites and balloons to determine the conditions that affect the upper atmospheric mass. Evaporation investigations are made to determine the loss of water supply and its effect upon general meteorological problems, more particularly in connection with large and important engineering projects of irrigation and reclamation. Investigation of frost-protection methods in the orchard regions are also conducted. The allotment for 1918 is \$40,600. The estimated amount for 1919 is \$35,600, a decrease of \$5,000, due to the curtailing of the investigations in frost-protection methods, with resulting decrease in the appropriation.

NOTE.—The appropriation for the Greenville station is included in the "out of Washington" expenses in considering the 1918 appropriation, as this appropriation has been incorporated with the "out of Washington" appropriation in the 1919 estimates.

OFFICIAL TRAVELING EXPENSES.

This item covers the traveling expenses of the Weather Bureau for all purposes, except that pertaining to aerological investigations, which is specifically provided for in the appropriation for that work. The appropriation for 1918 is \$25,500, and the estimated amount for 1919 is the same.

ADDITIONAL STATIONS FOR AEROLOGICAL INVESTIGATIONS.

The Army appropriation act includes an item of \$100,000 for the establishment, maintenance, and operation of additional stations for aerological work during 1918. The Weather Bureau estimates for 1919 provide for the transfer of \$98,740 of this fund to the "General Expense" fund of the Weather Bureau in order that the item may be incorporated in the Agricultural bill (\$1,260 being transferred to the statutory roll). About five additional stations will be established and operated in various parts of the United States, at which investigations of upper-air conditions will be made by means of kites, balloons, etc., and the records so obtained will be reduced, tabulated, and compiled, ready for publication for the benefit of the aviation service of the Army. The annual cost of operating a station of this class is approximately as follows:

Salaries	\$6, 000
Rent	700
Fuel	650
Stationery	50
Miscellaneous supplies	4, 000
Traveling expenses	500
Telegraphing, freight, and drayage	100
Total	12, 000

The Washington station has administrative supervision over the aerological work, including salaries, testing, repairs, and renewals of instrumental equipment for all stations. The sum of \$20,000 is required for this purpose. The cost of operating the Washington office and maintaining five aerological stations will be \$80,000. A balance of \$18,740 is required to equip and operate at least one additional station during the fiscal year 1919.

The information that the Weather Bureau collects from aerological stations and the advices based upon that information, are important factors in the conservation of life and aeroplanes at the numerous training stations of the Army and Navy. Investigations of the kind now considered are indispensable adjuncts to the efficient and economic development of aerial navigation, upon which such vast sums are now being expended.

(Thereupon, at 12.22 p. m., the committee adjourned until Friday, December 14, 1917, at 10.30 a. m.)

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

SUMMARY OF ESTIMATES

THURSDAY, DECEMBER 13, 1917



WASHINGTON
GOVERNMENT PRINTING OFFICE
1917

AGRICULTURE APPROPRIATION BILL

COMMITTEE ON AGRICULTURE, HOUSE OF REPRESENTATIVES.

Thursday, December 18, 1917.

The committee met at 10.30 o'clock a. m., Hon. A. F. Lever (chairman) presiding.

THE CHAIRMAN. Gentlemen, we have met this morning to begin hearings on the appropriation bill. Just how extended these hearings shall be will, of course, be a matter for the committee to determine. My own view is, that inasmuch as the estimates show practically no changes or increases we might confine ourselves very properly to this line of thought: First, what have you been doing this year with the money that is available to you? What notable progress have you made, if any? What do you propose to do with the funds that you are asking for in these estimates?

Now, it seems to me that that line of inquiry will give us about what we want.

MR. HEFLIN. What additional funds, if any?

THE CHAIRMAN. What additional funds have you asked for, and how do you expect to use these additional funds? I think that will give the members of the committee sufficient information with which to inform the House upon questions that may be asked. What does the committee think? And, gentlemen, if we will confine ourselves to that kind of inquiries, and all of us try to be prompt in attendance upon the committee, I am satisfied that we can make satisfactory progress. I do not think it is the purpose of any member of the committee to unduly rush this work. At the same time, we want to make as rapid progress as we can, not only for the convenience of the House, but for the convenience of the committeemen themselves. I presume all of you are, like the chairman, very busy with many other matters, and the quicker we can get through, the better. At the same time, we want sufficient information to give to the House on all propositions that may come up.

Are there any suggestions from members of the committee as to procedure? **MR. HAUGEN,** what do you think about the matter?

MR. HAUGEN. I am heartily in accord with the suggestion made by the chairman. I think we ought to expedite matters as much as possible.

THE CHAIRMAN. I think we adopted a very good rule in the consideration of the food-control bill of permitting the chairman to ask a few leading questions, as it were, after a general statement by the witness and then give each member of the committee, in the order of his place around the table, an opportunity to ask questions. I think that saves a lot of duplication of questions and a lot of waste of time.

Mr. LEE. Mr. Chairman, may I suggest that, as all the hearings will be printed it ought not to be necessary, for the information of a member who comes in late, to have witnesses repeat statements which have already been made.

The CHAIRMAN. That is a very good suggestion. We lose a great deal of time in members being late. Some question occurs to such a member in the course of the testimony of a witness. He asks a question regarding a matter which has already been covered. If members of the committee would feel free to say to the questioning member that that matter has already been covered, and all of us feel good-humored about it, I think we could save some time on that score.

Mr. WASON. I think the chairman should so rule.

The CHAIRMAN. The chairman will so rule.

Mr. HAUGEN. I was going to suggest that there are so many other things now to look after by members, which require so much work of the departments, I take it that is a matter that would have to be left largely to the discretion of the committee, as the cases may arise.

The CHAIRMAN. I think that is true.

Mr. HAUGEN. At the same time, I think every member of the committee is industrious and wants to do everything that he can to expedite matters.

Mr. WILSON. I do hardly believe that it would be policy to have it as a rule of the committee.

The CHAIRMAN. Oh, no. I think every member agrees that we ought to hear all as promptly as possible, and if a matter has been covered the chairman will take it upon himself to say that that matter has been covered in the record.

Mr. WASON. I do not think the time of the committee should be taken up except by the consent of the committee. We will be courteous to each other.

Mr. LEE. The governor of Virginia is in the city, and there is a certain very important matter in the State of Virginia that comes up to-day, and he has asked if I could go with him, and I would ask that I be excused after 11.15 to-day.

The CHAIRMAN. Without objection, Mr. Lee will be excused at 11.15.

The Committee on Banking and Currency invited me to name certain members of my committee to confer with a similar committee from the Agricultural Committee of the Senate, and from the Committee on Banking and Currency of the Senate also, on a matter touching the matter of the farm-loan system. I could not be present myself, and I named Mr. Lee, Mr. Chandler, Mr. Haugen, and Mr. McLaughlin. I see Mr. McLaughlin and Mr. Chandler are not present, and I presume they are in attendance on that meeting.

Mr. LEE. How much time will that consume?

The CHAIRMAN. I think but a very few minutes. It is a sort of informal matter.

Mr. HEFLIN. Is it the purpose to go along with the hearings each day?

The CHAIRMAN. Yes. There is another matter which we should decide—whether we should hold our hearings in the mornings, until about 12.15, or whether we should go on in the afternoon.

Mr. HAUGEN. I take it that the chairman has conferred with the leaders as to the program, and whatever suits the convenience of the committee is satisfactory to me.

The CHAIRMAN. I think, for this week at least, we had better run along until about 12.15 and then rest until the next day.

Mr. HAUGEN. What have you in mind as to when we shall wind up the hearings?

The CHAIRMAN. That will depend entirely on the testimony that is given. By the middle of next week I think we should complete the hearings.

Mr. HAUGEN. That suits me.

Mr. OVERMYER. How long did we debate about the bill last year?

The CHAIRMAN. A very short time. I do not remember exactly. We have devoted as much as six or eight weeks to the consideration of the bill.

Mr. OVERMYER. Two years ago we spent several months.

The CHAIRMAN. It took us only three days to put the bill through the House last year, and a week or 10 days to get the hearings completed.

Mr. OVERMYER. That is my recollection.

Mr. HEFLIN. I would like our bill to be one of the first bills passed after Christmas.

The CHAIRMAN. Mr. Harrison, of the Secretary's office, has prepared here a summary of the estimates, which gives a bird's-eye view of the whole situation, and, if the committee has no objection, I am going to ask that this be printed at the very beginning of the hearing.

Mr. HAUGEN. I suggest that it be printed as the very first thing in the hearings.

The CHAIRMAN. Without objection, that will be done.

(The summary referred to follows):

¹ ESTIMATES, 1919, DEPARTMENT OF AGRICULTURE.

GRAND SUMMARY.

Appropriations.	Increase.		Decrease.	
	Apparent.	Actual.	Apparent.	Actual.
Statutory salaries.....	\$474,370	.....	.....	\$16,600
Lump-fund appropriations.....	59,748	\$550,778	.....	.....
Total.....	¹ 534,118	¹ 534,118	.....	.....

¹ Includes supplemental estimates submitted in letter to the chairman of committee.

Appropriations for 1918.—The amount carried in the appropriation act for the current fiscal year is \$25,929,113. In addition, an item of \$2,000,000, to be expended during the fiscal year 1918 for the purchase of lands under the Weeks forestry law, was included in the appropriation act for 1917, making a total of \$27,929,113 available for expenditure during the present fiscal year.

Department estimates for 1919.—The estimates for next year aggregate \$26,463,231,¹ which is an apparent increase of \$534,118 ¹ over the amount carried in the present appropriation act. If the item of \$2,000,000 for land purchases under the Weeks

¹ Includes \$100,000 for the establishment and maintenance of aerological stations, transferred from the Army appropriation act; also \$127,600 for potash investigations, against which there is available for expenditure during the fiscal year 1918 a balance of \$150,253.62 from the \$175,000 appropriation for this purpose carried in the Agricultural appropriation act for 1917.

law is taken into consideration, there is an actual net decrease of \$1,465,882 in the total estimates of the department for the fiscal year 1919 as compared with the appropriations for 1918.

Estimates for 1919 as submitted by bureaus.—The estimates as originally submitted by the bureaus carried a total of \$29,762,009, or an apparent increase of \$3,832,896 over the figures for the present fiscal year.

Statement showing proposed changes on the statutory rolls of the Department of Agriculture for the fiscal year ending June 30, 1919.

SUMMARY.

	Number.	Increase or decrease.	Total.
<i>Reductions.</i>			
Places dropped:			
Without substitution.....	53	\$45,840	
In lieu of new places.....	117	73,890	\$119,730
<i>Additions.</i>			
Promotions.....	49	7,800	
New places:			
Actual.....	21	19,700	
By substitution for places dropped.....	78	67,840	
Transfers from lump funds without corresponding reduction.....	5	7,730	103,070
Actual decrease.....			16,660
Transfers from lump funds with corresponding reduction.....	482		491,030
Apparent increase.....			474,370

NOTE.—On July 1, 1917, there was a total of 18,751 employees in the Department of Agriculture, of whom 5,120 were carried on statutory rolls and 13,631 on lump funds.

PLACES DROPPED WITHOUT SUBSTITUTION.

Bureau of Animal Industry:		
50 clerks, at \$900 each.....	\$45,000	
2 laborers, at \$300 each.....	600	
1 laborer.....	240	\$45,840

PLACES DROPPED IN LIEU OF NEW PLACES.

Office of the Secretary:		
2 clerks, at \$720 each.....	1,440	
Office of Farm Management:		
1 lantern-slide colorist.....	\$720	
1 laborer.....	360	1,080
Weather Bureau:		
5 messengers, messenger boys, or laborers, at \$450 each.....	2,250	
4 messengers, messenger boys, or laborers, at \$360 each.....	1,440	
37 messenger boys, at \$360 each.....	13,320	17,010
Bureau of Plant Industry:		
9 clerks, at \$840 each.....	7,560	
1 clerk.....	720	
1 messenger boy.....	360	
5 messenger boys, at \$300 each.....	1,500	10,140
Bureau of Chemistry:		
22 clerks, at \$900 each.....	19,800	
1 clerk.....	840	
1 clerk.....	720	
3 food and drug inspectors, at \$1,400 each.....	4,200	25,560
Bureau of Soils:		
5 clerks, at \$900 each.....		4,500
Bureau of Entomology:		
3 clerks, at \$1,000 each.....	3,000	
4 clerks, at \$840 each.....	3,360	
4 messenger boys, at \$360 each.....	1,440	7,800
States Relations Service:		
4 clerks, at \$840 each.....		3,360
Bureau of Markets:		
2 laboratory aids, at \$600 each.....		1,200
Federal Horticultural Board:		
2 clerks, at \$900 each.....		1,800
		73,890
		\$119,730

PROMOTIONS.

Office of the Secretary:

1 mechanic, \$1,200, to 1 mechanical assistant, \$1,500.....	\$300	
1 cabinet shop foreman, \$1,200, to 1 mechanical assistant, \$1,500.....	300	
1 superintendent of shops, \$1,400, to 1 mechanical assistant, \$1,500.....	100	
1 engineer, \$1,400 to \$1,600.....	200	
1 electrical engineer and draftsman, \$1,200 to \$1,400.....	200	
8 firemen, \$720 to \$840 each.....	960	
3 cabinetmakers or carpenters, \$1,100 to \$1,260 each.....	480	
7 cabinetmakers or carpenters, \$1,020 to \$1,260 each.....	1,680	
2 cabinetmakers or carpenters, \$1,020 to \$1,100 each.....	160	
3 cabinetmakers or carpenters, \$900 to \$1,100 each.....	600	
1 electrician, \$1,100, to 1 electrician or wireman, \$1,200.....	100	
1 electrical wireman, \$1,100, to 1 electrician or wireman, \$1,200.....	100	
1 electrical wireman, \$900, to 1 electrician or wireman, \$1,000.....	100	
3 electrician's helpers, \$720 to \$840 each.....	360	
1 painter, \$1,020 to \$1,200.....	180	
5 plumbers or steam fitters, \$1,020 to \$1,200 each.....	900	
2 plumbers' helpers, \$720 to \$840 each.....	240	
1 blacksmith, \$900 to \$1,020.....	120	
1 elevator machinist, \$900 to \$1,020.....	120	
1 skilled laborer, \$840 to \$960.....	120	
4 laborers or messenger boys, at \$480 each, to 4 assistant messengers, messenger boys, or laborers, at \$600 each.....	480	
		\$7,800

ACTUAL NEW PLACES.

Office of the Secretary:

1 fireman.....	\$840	
2 elevator conductors, at \$720 each.....	1,440	
1 plumbers' helper.....	840	
1 tinner or sheet-metal worker.....	1,100	
		4,220

Bureau of Entomology:

1 messenger boy.....	480	
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Division of Publications:

2 draftsmen or photographers, at \$1,200 each.....	2,400	
1 laboratory aid.....	720	
3 clerks, at \$840 each.....	2,520	
3 laborers, messengers, or messenger boys, at \$720 each.....	2,160	
		7,800

Bureau of Crop Estimates:

5 clerks, class 1.....	6,000	
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Enforcement of the insecticide act:

1 sample and storeroom custodian.....	1,200	19,700
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NEW PLACES BY SUBSTITUTION FOR PLACES DROPPED.

Office of the Secretary:

1 clerk, class 2 (in lieu of 2 clerks, at \$720 each).....	\$1,400	
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Office of Farm Management:

1 clerk (in lieu of 1 lantern-slide colorist, \$720, and 1 laborer, \$360).....	1,080	
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Weather Bureau:

35 messengers, messenger boys, or laborers, at \$480 each (in lieu of 5 messengers, messenger boys, or laborers, at \$450 each; 4 messengers, messenger boys, or laborers, at \$360 each; and 37 messenger boys, at \$360 each).....	16,800	
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Bureau of Plant Industry:

7 clerks, class 1 (in lieu of 9 clerks, at \$840 each; 1 clerk, \$720; and 1 messenger boy, \$360).....	\$8,400	
3 laborers, messengers, or messenger boys, at \$480 each (in lieu of 5 messenger boys, at \$300 each).....	1,440	
		9,840

Bureau of Chemistry:

2 clerks, class 4 (these 2 places and 2 clerks, class 3, 2 clerks, class 2, and 6 clerks, class 1, in lieu of 22 clerks, at \$900 each; 1 clerk, \$840; and 1 clerk, \$720).....	3,600	
2 clerks, class 3 (see preceding note).....	3,200	
2 clerks, class 2 (see preceding note).....	2,800	
6 clerks, class 1 (see preceding note).....	7,200	
2 food and drug inspectors, at \$2,000 each (in lieu of 3 food and drug inspectors, at \$1,400 each).....	4,000	
		20,800

Bureau of Soils:

2 clerks, class 1 (these 2 places and 2 clerks, at \$1,000 each, in lieu of 5 clerks, at \$900 each).....	2,400	
2 clerks, at \$1,000 each (see preceding note).....	2,000	
		4,400

Bureau of Entomology:

1 clerk, class 3 (this place and 1 clerk, class 2, and 2 clerks, class 1, in lieu of 3 clerks, at \$1,000 each, and 4 clerks, at \$840 each).....	1,600	
1 clerk, class 2 (see preceding note).....	1,400	
2 clerks, class 1 (see preceding note).....	2,400	
4 messenger boys, at \$480 each (in lieu of 4 messenger boys, at \$360 each).....	1,920	
		7,320

States Relations Service:

2 clerks, class 3 (in lieu of 4 clerks, at \$840 each)..... \$3,200

Bureau of Markets:

2 messenger boys or laborers, at \$600 each (in lieu of 2 laboratory aids, at \$600 each)..... 1,200

Federal Horticultural Board:

1 clerk, class 4 (in lieu of 2 clerks, at \$900 each)..... 1,800

\$67,840

TRANSFERS FROM LUMP FUNDS TO STATUTORY ROLL WITHOUT CORRESPONDING REDUCTION IN THE LUMP-FUND APPROPRIATIONS.

Office of the Secretary:

From extra labor roll of Office of the Secretary—

1 assistant in exhibits..... \$2,000

From appropriation for acquisition of lands (Weeks forestry act)—

1 law clerk..... 2,750

1 laborer or messenger boy..... 480

From appropriation for post-road construction (Federal-aid road act)—

1 clerk, class 3..... 1,600

1 clerk..... 900

\$7,730\$103,070

Actual decrease.....

16,660

TRANSFERS FROM LUMP FUNDS TO STATUTORY ROLLS WITH CORRESPONDING REDUCTION IN THE LUMP-FUND APPROPRIATIONS.

Office of Farm Management:

To statutory roll of Office of Farm Management—

1 clerk, class 4..... \$1,800

2 clerks, class 1..... 2,400

1 clerk..... 1,100

1 clerk..... 1,000

6 clerks, at \$900 each..... 5,400

2 clerks, at \$840 each..... 1,680

1 library assistant..... 900

1 messenger, messenger boy, or laborer..... 480

1 charwoman..... 240

\$15,000

To statutory roll of Office of the Secretary—

1 watchman..... 720

\$15,720

Weather Bureau:

1 instrument maker..... 1,260

Bureau of Animal Industry:

To statutory roll of Bureau of Animal Industry—

2 clerks, class 2..... 2,800

1 clerk..... 1,260

44 clerks, class 1..... 52,800

10 clerks, at \$1,020 each..... 10,200

6 clerks, at \$1,000 each..... 6,000

1 skilled laborer..... 900

5 messengers, skilled laborers, or laborers, at \$720 each..... 3,600

2 laborers, at \$600 each..... 1,200

6 laborers, at \$540 each..... 3,240

7 messenger boys, at \$480 each..... 3,360

1 charwoman..... 540

\$5,900

To statutory roll of Office of the Secretary—

1 clerk, class 3..... 1,600

1 clerk, class 1..... 1,200

2 watchmen, at \$720 each..... 1,440

4,24090,140

Bureau of Plant Industry:

To statutory roll of Bureau of Plant Industry—

1 clerk, class 4..... 1,800

1 clerk, class 3..... 1,600

2 clerks, class 2..... 2,800

5 clerks, class 1..... 6,000

4 clerks, at \$1,000 each..... 4,000

3 clerks, at \$900 each..... 2,700

2 messengers, messenger boys, or laborers, at \$600 each..... 1,200

1 laboratory aid, clerk, or skilled laborer..... 1,020

3 laborers, messengers, or messenger boys, at \$480 each..... 1,440

1 laborer or charwoman..... 480

2 laborers or messenger boys, at \$420 each..... 840

2 messenger boys, at \$360 each..... 720

24,600

To statutory roll of Office of the Secretary—

1 watchman..... 720

To statutory roll of Bureau of Markets—

1 draftsman..... 1,200

1,92026,520

Forest Service:

To statutory roll of Forest Service—

1 forest supervisor.....	\$2,000
1 forest ranger.....	1,500
1 forest ranger.....	1,400
1 forest ranger.....	1,200
1 clerk.....	1,400
2 clerks, at \$1,200 each.....	2,400
1 clerk.....	1,020
5 clerks, at \$900 each.....	4,500
1 clerk.....	600
1 draftsman or surveyor.....	1,600
3 draftsmen or surveyors, at \$1,500 each.....	4,500
4 draftsmen or surveyors, at \$1,400 each.....	5,600
3 draftsmen, at \$1,200 each.....	3,600
1 blue printer.....	800
1 messenger or laborer.....	960
1 messenger or laborer.....	720
2 telephone operators, at \$600 each.....	1,200
2 messengers or messenger boys, at \$360 each.....	720
	<hr/>
	\$35,820

To statutory roll of Office of the Secretary—

1 watchman.....	720	
	<hr/>	\$36,540

Bureau of Chemistry:

To statutory roll of Bureau of Chemistry—

1 clerk.....	1,440
3 clerks, class 2.....	4,200
18 clerks, class 1.....	21,600
2 clerks, at \$1,000 each.....	2,000
1 laboratory helper.....	840
1 laboratory helper.....	720
1 sampler.....	1,200
1 mechanic.....	1,800
1 mechanic.....	1,400
1 messenger boy or laborer.....	480
	<hr/>
	35,680

To statutory roll of Office of the Secretary—

1 mechanic.....	1,000	
2 watchmen, at \$720 each.....	1,440	
	<hr/>	2,440
		38,120

Bureau of Soils:

1 machinist.....	1,440	
1 laborer.....	600	
	<hr/>	2,040

Bureau of Entomology:

To statutory roll of Bureau of Entomology—

1 editor.....	2,250
1 clerk, class 4.....	1,800
1 clerk, class 3.....	1,600
1 clerk, class 2.....	1,400
3 clerks, class 1.....	3,600
1 clerk.....	1,000
1 clerk.....	900
1 gardener.....	600
	<hr/>
	13,150

To statutory roll of Office of the Secretary—

2 watchmen, at \$720 each.....	1,440	
	<hr/>	14,590

Bureau of Biological Survey:

To statutory roll of Bureau of Biological Survey—

1 executive assistant.....	1,800
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To statutory roll of Office of the Secretary—

1 watchman.....	720	
	<hr/>	2,610

Bureau of Crop Estimates:

To statutory roll of Bureau of Crop Estimates—

1 messenger.....	840	
1 laborer.....	720	
	<hr/>	1,560

To statutory roll of Office of the Secretary—

1 watchman.....	720	
	<hr/>	2,280

States Relations Service:

To statutory roll of States Relations Service—

1 clerk, class 4.....	1,800
3 clerks, class 3.....	4,800
1 clerk.....	1,500
2 clerks, class 2.....	2,800
1 clerk.....	1,260
9 clerks, class 1.....	10,800
1 clerk.....	1,100
16 clerks, at \$1,000 each.....	16,000
3 clerks, at \$900 each.....	2,700

State Relations Service—Continued.

To statutory roll of States Relations Service—Continued.

1 clerk or lantern-slide colorist.....	\$900	
1 messenger, messenger boy, or laborer.....	720	
6 messengers, messenger boys, or laborers, at \$480 each.....	2,880	
2 laborers or charwomen, at \$240 each.....	480	
	<hr/>	\$47,740
To statutory roll of Office of the Secretary—		
2 watchmen, at \$720 each.....	1,440	
	<hr/>	\$49,180

Bureau of Public Roads:

To statutory roll Bureau of Public Roads—

1 clerk, class 4.....	1,800	
1 clerk, class 3.....	1,600	
1 clerk.....	1,500	
1 clerk.....	1,380	
1 clerk.....	1,000	
1 clerk.....	900	
1 skilled laborer.....	1,200	
1 laborer, messenger boy, or charwoman.....	480	
	<hr/>	9,860
To statutory roll of Office of the Secretary—		
2 watchmen, at \$720 each.....	1,440	
	<hr/>	11,300

Bureau of Markets:

To statutory roll of Bureau of Markets—

1 clerk in charge of supplies and accounts.....	2,250	
1 clerk, class 4.....	1,800	
1 executive clerk.....	1,800	
1 clerk.....	1,440	
11 clerks, class 2.....	15,400	
1 clerk.....	1,300	
62 clerks, class 1.....	74,400	
1 clerk.....	1,100	
45 clerks, at \$1,000 each.....	45,000	
2 clerks, at \$1,080 each.....	2,160	
5 clerks, at \$1,020 each.....	5,100	
1 clerk.....	960	
1 clerk.....	900	
4 telegraph operators, at \$1,200 each.....	4,800	
7 telegraph operators, at \$1,080 each.....	7,560	
1 telegraph operator.....	1,020	
1 draftsman.....	1,200	
1 laborer.....	840	
1 laborer.....	720	
2 laborers, at \$660 each.....	1,320	
1 messenger boy.....	600	
3 messenger boys or laborers, at \$540 each.....	1,620	
8 messenger boys, at \$480 each.....	3,840	
2 laborers, at \$480 each.....	960	
12 messenger boys, at \$420 each.....	5,040	
1 messenger boy.....	360	
1 messenger boy.....	300	
3 charwomen, at \$480 each.....	1,440	
1 charwoman.....	300	
6 charwomen, at \$240 each.....	1,440	
	<hr/>	186,970
To statutory roll of Office of the Secretary—		
3 clerks, class 1.....	3,600	
1 chief elevator conductor.....	840	
1 elevator conductor.....	720	
1 laborer or messenger boy.....	480	
2 watchmen, at \$720 each.....	1,440	
	<hr/>	7,080
		194,050

Enforcement of the insecticide act:

1 charwoman.....	480
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Federal Horticultural Board:

1 executive clerk.....	2,000	
1 clerk, class 1.....	1,200	
3 clerks, at \$1,000 each.....	3,000	
	<hr/>	6,200
		491,030
Apparent increase.....		474,370

TRANSFERS BETWEEN STATUTORY ROLLS OF DIFFERENT BRANCHES OF THE DEPARTMENT.

Office of the Secretary:

To States Relations Service, 1 messenger, messenger boy or laborer.....	\$600
To Federal Horticultural Board, 1 clerk, class 3.....	1,600
	<hr/>

Bureau of Animal Industry:

To Office of the Secretary, 1 watchman.....	720
	<hr/>

Bureau of Plant Industry:

To Bureau of Markets—

3 clerks, at \$900 each.....	\$2,700
1 laboratory aid.....	960
	<u>3,600</u>

Division of Publications:

To Office of the Secretary—

1 assistant editor.....	2,000
4 assistant editors, at \$1,800 each.....	7,200
1 assistant editor.....	1,600
	<u>10,800</u>

States Relations Service:

To Office of the Secretary—

1 clerk.....	840
2 clerks, at \$720 each.....	1,440
	<u>2,280</u>

Bureau of Public Roads:

To Office of the Secretary, 1 carpenter.....	1,200
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Bureau of Markets:

To Office of the Secretary, 1 mechanical assistant.....	1,800
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Federal Horticultural Board:

To Office of the Secretary, 1 clerk, class 4.....	1,800
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CHANGES IN TITLES.

Office of the Secretary:

- 1 mechanic, \$1,200, to 1 mechanical assistant, \$1,500.
- 1 cabinet shop foreman, \$1,200, to 1 mechanical assistant, \$1,500.
- 1 superintendent of shops, \$1,400, to 1 mechanical assistant, \$1,500.
- 1 electrician, \$1,100, to 1 electrician or wireman, \$1,200.
- 1 electrical wireman, \$1,100, to 1 electrician or wireman, \$1,200.
- 1 electrical wireman, \$1,000, to 1 electrician or wireman, \$1,000.
- 1 electrical wireman, \$900, to 1 electrician or wireman, \$1,000.
- 1 messenger or laborer, \$840, to 1 electrician's helper, \$840.
- 1 clerk, \$720, to 1 watchman, \$720.

Weather Bureau:

- 1 chief instrument maker, \$1,440, to 1 instrument maker, \$1,440.

Forest Service:

- 20 forest rangers, at \$1,100 each (full time), to 20 forest guards, at \$1,100 each (half time), and 40 forest guards, at \$1,100 each (one-fourth time).
- 1 lithographer, \$1,200, to 1 lithographer or photographer, \$1,200.

Bureau of Entomology:

- 1 messenger or laborer, \$840, to 1 clerk, \$840.

Division of Publications:

- 1 editor, who shall be chief of division, \$3,500, to 1 chief of division, \$3,500.
- 1 editor, who shall be assistant chief of division, \$2,500, to 1 assistant chief of division, \$2,500.
- 1 assistant editor, \$2,000, to 1 assistant, \$2,000.
- 1 assistant editor, \$1,400, to 1 assistant, \$1,400.
- 1 assistant editor in charge of indexing, \$2,000, to 1 assistant in charge of indexing, \$2,000.

States Relation Service:

- 1 library cataloguer, \$900, to 1 clerk, \$900.

Bureau of Markets:

- 2 laboratory aids, at \$600 each, to 2 messenger boys or laborers, at \$600 each.

Statement showing proposed changes in lump-fund appropriations of the Department of Agriculture for the fiscal year ending June 30, 1919.

SUMMARY.

Items.	Increase.		Decrease.	
	Apparent.	Actual.	Apparent.	Actual.
Office of the Secretary:				
Office of Farm Management—Farm-management investigations.....			\$15,720	
Weather Bureau:				
Expenses outside of Washington.....	\$1,500	\$1,500		
Greenville (S. C.) station.....			6,500	\$6,500
Establishment and maintenance of additional acrological stations (new).....	¹ 98,740	² 100,000		
Repair of cable and telegraph lines (new).....	25,000	25,000		
Bureau of Animal Industry:				
Inspection and quarantine (eradication of tuberculosis).....	55,270	66,430		
Tick eradication.....			11,140	
Dairy investigations.....			14,540	
Animal-husbandry investigations.....	31,100	³ 48,140		
Investigation of animal diseases.....			2,040	
Construction of buildings at Beltsville and Bethesda, Md....			23,600	23,600
Hog-cholera investigation and eradication.....	33,800	42,400		
Dourine investigation and eradication.....			1,200	
Meat inspection.....			24,420	
Bureau of Plant Industry:				
Investigations in plant pathology.....			480	
Fruit-disease investigations.....			490	
Eradication of citrus canker.....			180,000	180,000
Investigations in forest pathology.....			2,280	
Eradication of white-pine blister rust.....			53,557	45,792
Crop physiology and breeding investigations.....			600	
Crop-acclimatization investigations.....	25,000	25,000		
Seed-testing laboratories.....	1,980	3,000		
Sugar-plant investigations.....	8,100	10,000		
Western irrigation agriculture investigations.....			1,800	
Pomological investigations.....			21,920	⁴ 19,520
Horticultural investigations.....			2,200	
Foreign seed and plant introduction.....			1,600	
Purchase of land at Chico, Cal.....			35,000	35,000
Purchase and distribution of valuable seeds.....			1,400	
Forest Service:				
National forests and general administration.....			14,440	
Classification of lands for homestead settlement.....			8,300	
Survey of lands chiefly valuable for agriculture.....			19,600	10,000
Forest-products investigations.....	17,660	20,000		
Tree planting on national forests.....			20,000	20,000
Reconnaissance of forest resources.....	30,000	30,000		
Miscellaneous forest investigations.....			1,860	
Bureau of Chemistry:				
Color investigations.....	21,320	25,000		
Enforcement of the food and drugs act.....			34,440	
Insecticide and fungicide investigations (new).....	25,000	25,000		
Bureau of Soils:				
Investigations of fertilizer resources.....			2,040	
Potash investigations and demonstrations (new).....	⁵ 127,600	⁵ 127,000		
Bureau of Entomology:				
Cereal and forage insect investigations.....			1,200	
Forest insect investigations.....			900	
Truck-crop and stored-product insect investigations.....	20,000	23,000		
Bee-culture investigations and demonstrations.....	15,000	15,000		
Tropical and subtropical fruit insect investigations.....			600	
Investigation and control of the Mediterranean and other fruit flies.....			1,200	
Miscellaneous insect investigations.....			4,050	
Administrative expenses.....	6,000	8,640		
Gipsy and brown-tail moth investigations.....			1,000	
Bureau of Biological Survey:				
Maintenance and improvement of Sullys Hill game preserve.....			\$5,000	\$5,000
Economic investigations (food habits of birds and mammals, etc.).....			720	
Administrative expenses.....			1,890	

¹ Exclusive of \$1,260 (instrument maker) transferred to the statutory roll.

² Transferred from Army appropriation act.

³ Not including \$15,000 for Morgan horse farm, diverted to other projects.

⁴ Excluding \$21,520 transferred to the Bureau of Markets, there is an actual net increase in the funds for pomological investigations of \$2,000.

⁵ No appropriation for 1918, but there is available for expenditure during the fiscal year 1918 a balance of \$150,253.62 from an appropriation of \$175,000 provided for potash investigations in the agricultural appropriation act for 1917.

Statement showing proposed changes in lump-fund appropriations of the Department of Agriculture for the fiscal year ending June 30, 1919—Continued.

SUMMARY—Continued.

Items.	Increase.		Decrease.	
	Apparent.	Actual.	Apparent	Actual.
Division of Publications:				
Envelopes, stationery, and materials.....	\$1,000	\$1,000		
Telephone, telegraph, freight, and express service.....	250	250		
Extra labor and emergency employments (new).....	2,500	2,500		
Bureau of Crop Estimates:				
Administrative expenses.....		2,500	\$470	
Field investigations.....	28,465	27,775		
Rent in the District of Columbia.....	15,000	15,000		
States Relations Service:				
Administration of the Hatch, Adams, and Smith-Lever Acts, and administration of insular experiment stations.....		4,740		
Extension work in the Northern and Western States.....			23,440	
Extension work in the Southern States.....			9,420	
Insular experiment stations.....	35,000	35,000		
Home-economic investigations.....			4,880	
Administrative expenses.....		6,700		
Bureau of Public Roads:				
Road-management investigations.....			1,000	
Road building and maintenance investigations.....			720	
Rural-engineering investigations.....	35,900	35,900		
Administrative expenses.....		9,580		
Erection of laboratory building at Arlington Farm.....			75,000	\$75,000
Bureau of Markets:				
Marketing and distributing farm products.....	2,840	32,900		
Market reports on fruits and vegetables.....	36,920	75,000		
Market reports on live stock and meats.....	4,320	23,200		
Food supply investigations.....			1,200	
Market inspection of perishable foods (new).....	113,000	113,000		
Investigation and demonstration of cotton standards, and cotton testing.....			2,080	
Studies of rural cooperation.....			2,480	
State cooperation in marketing work.....	18,500	22,000		
Grain-standardization investigations.....			13,840	
Enforcement of the standard-basket act.....	1,000	1,000		
Administrative expenses.....	3,425	9,895		
Enforcement of the cotton-futures act.....			10,020	
Enforcement of the grain-standards act.....			62,580	
Administration of the warehouse act.....			6,080	
Enforcement of the insecticide act.....	7,060	7,540		
Federal Horticultural Board:				
Enforcement of the plant-quarantine act.....			6,200	
Control of the pink bollworm of cotton.....			50,000	50,000
Miscellaneous:				
Demonstrations on reclamation projects.....			1,400	
Total.....	848,250	1,021,190	788,502	470,412
Net apparent increase, \$59,748. Net actual increase, \$550,778.				

WEATHER BUREAU.

Expenses outside of Washington. Apparent and actual increase, \$1,500.

The total amount recommended for field expenses of the weather service includes \$6,500 for the maintenance and operation of the station at Greenville, S. C. The specific appropriation for that station included in the act for 1918 has been omitted. Hence there is an actual decrease of \$5,000 in the general fund for expenses outside of Washington. This is explained by the fact that it is proposed to reduce the allotment for the investigation of frost-protection methods from \$10,000 to \$5,000.

Greenville (S. C.) station. Apparent and actual decrease, \$6,500.

This item has been merged with the subappropriation for "expenses outside of Washington."

Establishment and maintenance of additional aerological stations. New item. Apparent increase, \$98,740; actual increase, \$100,000.

This item is now carried in the Army appropriation act for 1918 but, as the work is performed under the direction of the Secretary of Agriculture, it is believed that the item should be transferred to the agricultural appropriation act.

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

SUMMARY OF ESTIMATES

THURSDAY, DECEMBER 13, 1917



WASHINGTON
GOVERNMENT PRINTING OFFICE
1917

Insecticide and fungicide investigations. New item, \$25,000.

It is highly important that farmers be able to secure at reasonable prices an adequate supply of insecticides and fungicides of good quality. The present prices of many of these articles are almost prohibitive. It is proposed to undertake chemical investigations with a view to develop new, better, and cheaper insecticides and fungicides than those now on the market.

BUREAU OF SOILS.

Potash investigations and demonstrations. New item, \$127,600.

While this appears as a new item, there was available on July 1, 1917, for expenditure during the current fiscal year a balance of \$150,253.62 from the appropriation of \$175,000 for potash investigations in the Agricultural appropriation act for the fiscal year 1917. The estimate submitted for the next fiscal year (\$127,600), therefore, represents an actual decrease of approximately \$22,000 below the amount available for the present year. This estimate is regarded as very conservative and is based upon the experience gained during the brief period that the kelp plant at Summerland, Cal., has been in actual operation and upon the department's familiarity with the operations of the private plants on the Pacific coast.

BUREAU OF ENTOMOLOGY.

Truck-crop and stored-product insect investigations. Apparent increase, \$20,000; actual increase, \$23,000.

The losses to grains and other food products in granaries, mills, warehouses, households, etc., through insect depredations are frequently greater than the losses caused by insects to the growing crops, amounting to millions of dollars annually. A large part of this damage can be prevented through the development of better methods of control and by the more general application of such methods as well as of methods of control already known. The increase requested will enable the department to enlarge its work in this field so that it will be in a position to deal more effectively with the problem.

Bee-culture investigations and demonstrations. Apparent and actual increase, \$15,000.

There is a strong demand from many sections of the country for assistance in promoting bee culture. It is proposed further to develop during the next fiscal year the extension work of the department in this field. Honey is a concentrated food of great value and may be used in place of sugar to a considerable extent.

Administrative expenses. Apparent increase, \$6,000; actual increase, \$8,640.

Of this amount, \$6,000 will be necessary in order to systematize the extension work in insect control, carried on in cooperation with the States Relations Service. The demand for cooperative work of this character has greatly increased. The remainder of the increase requested under this item (\$2,640) is made necessary by the normal growth of the administrative work of the Bureau.

BUREAU OF BIOLOGICAL SURVEY.

Maintenance and improvement of Sullys Hill game preserve. Apparent and actual decrease, \$5,000.

The present appropriation of \$5,000 for the maintenance of the Sullys Hill game preserve is available until expended. When this fund becomes exhausted, the preserve will be maintained from the general fund for maintenance of reservations. The item therefore has been omitted.

DIVISION OF PUBLICATIONS.

Envelopes, stationery, and materials. Apparent and actual increase, \$1,000.

This additional appropriation is made necessary on account of the increased quantity of stationery and other materials required in connection with the duplicating and mailing of informational circulars.

Telephone, telegraph, freight, and express service. Apparent and actual increase, \$250.

The present telephone service of the Division of Publications is inadequate for the prompt handling of its business. A small increase is also necessary in order to pay freight and express charges incident to the shipment of films under the authority conferred in the appropriation act for 1918.

Extra labor and emergency employments. New item, \$2,500.

During certain months the volume of work of the Division of Publications increases to such an extent that the regular force is unable to keep it up to date. The small appropriation recommended will enable the department to meet this situation.

BUREAU OF CROP ESTIMATES.

Administrative expenses. Apparent decrease, \$470; actual increase, \$2,500.

This sum is needed for the employment of additional labor in the mailing section of the bureau and for the purchase of stationery and other office supplies and equipment.

Field investigations. Apparent increase, \$28,465; actual increase, \$27,775.

It is proposed to strengthen the work of the department in estimating the production of truck and fruit crops and to make more effective the routine work involved in estimating general farm crops. An increase of \$27,775 is asked for this purpose, which will be expended as follows: \$9,000 for additional traveling expenses for nine crop specialists now in the service; \$1,500 for increased travel required of the chief of field service and for inspection trips by representatives of the administrative office; \$600 for cablegram service from the International Institute of Agriculture at Rome; \$675 for telegraph expenses of nine truck and fruit crop specialists; \$4,000 for adding machines for 23 field agents; \$7,500 for stationery; and \$4,500 for miscellaneous office equipment, emergency travel, and renewal of old equipment, etc., in the field service.

RENT IN THE DISTRICT OF COLUMBIA.

Rent of buildings, Department of Agriculture. Apparent and actual increase, \$15,000.

The department is seriously handicapped in many directions by the lack of adequate space. Many of the buildings now occupied are greatly overcrowded, this condition being especially true in the Bureau of Markets. It is also proposed to transfer to Washington the food research laboratory of the Bureau of Chemistry, for which suitable quarters will have to be provided. Several other branches of the department are in urgent need of additional office and laboratory space.

STATES RELATIONS SERVICE.

Administration of the Hatch, Adams, and Smith-Lever Acts, and administration of insular experiment stations. No apparent increase; actual increase, \$4,740.

A small increase is recommended in the allotment for the administration of the Smith-Lever funds, which will be increased by \$1,000,000 during the fiscal year 1919.

Insular experiment stations. Apparent and actual increase, \$35,000.

The experiment stations maintained by the department in Alaska, Hawaii, Porto Rico, and Guam are rendering valuable assistance in the solution of local agricultural problems. Additional funds are needed for the more effective prosecution of the work at these places and to provide for the inauguration of similar activities in the Virgin Islands. The increase will be apportioned as follows: \$5,000 to the Alaska stations, for use in equipping and maintaining the experiment station at Matanuska; for remodeling the cattle barns on the Kodiak Islands, and for the employment of an extension agent; \$5,000 to the Hawaii station, to provide for the development of extension and demonstration work, the undertaking of studies in connection with banana and coffee diseases, and the extension of cooperative work with the War Department in forage production; \$5,000 to the Porto Rico station, to be used for rice production investigations and citrus-scab control work; \$5,000 to the Guam station, for the investigation and control of insect and fungous pests and for the inauguration of extension work; and \$15,000 for the establishment and maintenance of an experiment station on the Virgin Islands, where there is urgent need for undertaking work in the diversification of agriculture with a view to make the islands more nearly self-supporting.

Administrative expenses. No apparent increase; actual increase, \$6,700.

Although the personnel and volume of work of the States Relations Service has greatly increased during the past two or three years, there has been no corresponding increase in the appropriation for administrative expenses. The additional sum requested will provide for the normal growth of the publication and lantern-slide activities, the more satisfactory handling of supplies, the employment of temporary help, and numerous other necessary emergency expenses.

BUREAU OF PUBLIC ROADS.

Rural-engineering investigations. Apparent and actual increase, \$35,900.

The importance of farm machinery in connection with crop production is obvious. The maximum of efficiency in the utilization of such machinery can be obtained only through the development of simple, standardized, and highly efficient types. The farm tractor, because of its relative importance, is receiving special attention at the present time. The increase recommended will make it possible to install a testing plant at the Arlington Farm and to employ the requisite personnel for undertaking a thorough investigation along this line.

Administrative expenses. No apparent increase; actual increase, \$9,580.

This sum will be needed to provide for the employment from time to time of additional clerks and temporary labor and for the purchase of necessary office equipment and supplies, the cost of which has greatly advanced.

Erection of laboratory building at Arlington Farm. Apparent and actual decrease \$75,000.

The purpose of this appropriation will be accomplished during the present fiscal year. The item therefore has been omitted.

BUREAU OF MARKETS.

Marketing and distributing farm products. Apparent increase, \$2,840; actual increase, \$32,900.

Of this amount, \$20,320 represents the transfer from the Bureau of Plant Industry of the marketing phases of the fruit handling, transportation, and storage investigations and makes no provision for the enlargement of these activities. The balance of the increase recommended (\$12,580) will provide for the extension of the investigations relating to the marketing of live stock, meats, and animal by-products. The need for reliable and accurate information on this subject is increasing, and the fact that the meat supply of the country has not kept pace with the Nation's growth makes it imperative that greater attention be given to improving the distribution of live stock.

Market reports on fruits and vegetables. Apparent increase, \$36,920; actual increase, \$75,000.

With the use of funds made available by the food production act, it has been possible during the present year to extend the market news service to a number of important fruit and vegetable crops not previously reported upon, to increase the number of permanent branch offices from 12 to 37, to expand the leased-wire service of the bureau to include nearly all the permanent branch stations, and to open 80 temporary field stations in producing areas for distributing information on specific crops. The amount recommended under this item will provide for the maintenance of the six additional permanent branch offices which were opened in 1917, making a total of 18 permanent branch offices, and it will also make possible a somewhat more complete field service on important crops than was rendered during the season of 1916. It will not be sufficient, however, for the continuation of the work on the basis made possible under the emergency appropriation.

Market reports on live stock and meats. Apparent increase, \$4,320; actual increase, \$23,200.

On account of the difficulty of getting this work under way, it was not possible to develop it to its maximum until comparatively late in the fiscal year. With the increase requested the work can be conducted in an effective manner for a full year.

Market inspection of perishable foods. New item, \$113,000.

Specific provision was made for this work in the food-production act, and \$101,700 was allotted for the purpose from the fund made available by that act. The work was not inaugurated until the middle of September, so that the estimate of \$113,000 does not provide for any expansion during the next fiscal year. The act authorizes the Secretary to investigate and certify to shippers the condition as to soundness of fruits, vegetables, and other food products when received at the principal central markets. Work has been inaugurated in some of the more important markets and will be extended to others as rapidly as practicable, covering 31 markets in all. It is contemplated that one inspector in each market will be able to handle the work except in the very large markets, such as New York, Chicago, Philadelphia, and Boston, where from two to four inspectors will be required. There is a great demand on the part of producers, transportation companies, and receivers for a service of this character.

State cooperation in marketing work. Apparent increase, \$18,500; actual increase, \$22,000.

Under the present appropriation cooperative work in marketing has been actively under way in 21 States. Recently it has been extended to seven additional States under arrangements with the States Relations Service and State agencies, which will enable the bureau to finance this new work during the remainder of the fiscal year 1918. Next year, however, it will be necessary for the Bureau of Markets to assume a larger share of the expense and to be in position to carry the work through an entire fiscal year. Calls from State authorities for assistance in solving marketing problems have increased greatly during the past year, and a number of State legislatures have recently created bureaus of marketing, which in practically all cases are authorized to cooperate with the Federal Department of Agriculture. As a general rule, the States contribute as much to the support of this work as the Federal Government, and in some cases considerably more. In order to meet the needs for increased work in the 28 States in which cooperation is now effective, additional funds will be required. It is estimated that an average expenditure of \$2,000 will be necessary to adequately care for the work in each State. A small increase in the amount for administrative expenses is also needed.

Enforcement of the standard-basket act. Apparent and actual increase, \$1,000.

The present appropriation was sufficient for the fiscal year 1918, as the standard-basket act did not become operative until November, 1917. In order to enforce the provisions of this law through an entire fiscal year a slightly increased appropriation will be necessary.

Administrative expenses. Apparent increase, \$3,425; actual increase, \$9,895.

The present appropriation will be insufficient to defray expenses properly chargeable against it during the fiscal year 1919. The increase in the appropriations of the bureau necessarily requires a corresponding increase in administrative expenses and additional funds are needed to provide adequately for supplies, office equipment, furniture, etc.

ENFORCEMENT OF THE INSECTICIDE ACT.

Enforcement of the insecticide act. Apparent increase, \$7,060; actual increase, \$7,540.

The enforcement of this act is especially important in view of the urgent need for increased crop production. It is essential, of course, that the farmer be able to obtain pure insecticides and fungicides. Additional expert assistance will be required for the examination of the increased number of samples that will be collected and also for the efficient conduct of investigative work now under way on disinfectants and germicides.

FEDERAL HORTICULTURAL BOARD.

Control of pink bollworm of cotton. Apparent and actual decrease, \$50,000.

This item is omitted, as the appropriation provided thereunder is available until expended. In addition, the urgent deficiency act approved October 6, 1917 (Public No. 64), carries a special appropriation of \$250,000 for preventing the establishment and spread of the pink bollworm of cotton in Texas and other parts of the United States. If it is later found that additional funds are needed for the effective prosecution of the work, a supplemental estimate will be submitted.

CHANGES IN PHRASEOLOGY.

BUREAU OF ANIMAL INDUSTRY.

Animal-husbandry investigations.—The proviso carrying \$15,000 for the purchase of lands in the vicinity of the Morgan Horse Farm near Middlebury, Vt., has been omitted, as the object for which this appropriation was made will be accomplished during the fiscal year 1918.

Dourine investigation and eradication.—The \$50,000 immediately available clause in this item has been omitted, as it is believed that the present appropriation will be sufficient to carry on the work to the end of the current fiscal year.

Meat inspection.—Minor changes in the wording of this paragraph have been made so that the law will refer to the proper fiscal year.

BUREAU OF PLANT INDUSTRY.

Eradication of citrus canker.—The \$180,000 immediately available provision has been omitted, as the present appropriation is believed to be sufficient to carry the work through the fiscal year 1918.

Eradication of white-pine blister rust.—The language of this paragraph has been amended by omitting the \$150,000 immediately available provision. The funds available for the balance of the present fiscal year are considered to be ample.

Cotton, truck, and forage-crop disease investigations.—The regular funds under this item will be sufficient for the conduct of these investigations during the current fiscal year. The \$5,000 immediately available clause therefore has been omitted.

Pomological investigations.—The language of this paragraph has been amended to accord with the proposed transfer to the Bureau of Markets of the distinctly marketing features of the investigations and to provide for a continuance and extension in the Bureau of Plant Industry, in cooperation with the Bureau of Markets, of investigations of fruits subsequent to their harvesting, such as ripening and maturity studies, which are primarily within the field of production but which require that the product be followed through certain marketing processes and into storage.

Horticultural investigations.—This paragraph has been amended so as to provide for the transfer to the Bureau of Markets of the distinctly marketing phases of the horticultural work and for the continuance and extension in the Bureau of Plant Industry, in cooperation with the Bureau of Markets, of such investigations of truck and related crops subsequent to their harvesting as are primarily within the field of production but which require that the product be followed through certain processes of marketing and into commercial storage.

FOREST SERVICE.

Nebraska National Forest.—The provision for the purchase of lands for nursery sites has been omitted, as the object of this legislation will be accomplished during the current fiscal year.

Additional national forests.—The language relating to the disposition of moneys received on account of certain permits has been omitted, as it is continuing legislation.

Classification of lands for homestead settlement.—New language has been added with a view to provide for the examination and appraisal of lands in effecting exchanges authorized by law.

Survey of lands chiefly valuable for agriculture.—Minor changes in phraseology have been made in order to make available for expenditure during the fiscal year 1919 any unexpended balance of the appropriation under this item for the fiscal year 1918.

Hire of automobiles and motorcycles on a mileage basis.—A new paragraph is proposed authorizing the Secretary of Agriculture to pay not to exceed 2 cents per mile for a motorcycle or 6 cents per mile for an automobile used for necessary travel on official business in the Forest Service.

Utilization of mineral resources of lands acquired under the Weeks forestry law.—In the estimates last year the insertion of the word "hereafter" at the beginning of this paragraph was suggested, in order that there might be no doubt as to the permanent nature of the legislation. Although the change was not made, the solicitor of the department is of the opinion that Congress intended this provision to be continuing legislation and that there is no necessity for retaining it in the act. The paragraph therefore has been omitted.

BUREAU OF CHEMISTRY.

Color investigations.—New language has been added to this paragraph in order to provide specific authority for cooperation between the Bureau of Chemistry and private agencies in conducting these investigations.

BUREAU OF SOILS.

Potash investigations and demonstrations.—While this appears as a new item under general expenses of the Bureau of Soils, it contemplates a continuance during the fiscal year 1919 of work authorized by Congress in the agricultural act for 1917. The language of the paragraph follows the phraseology of the item contained in the 1917 act, except that the Secretary of Agriculture is authorized to dispose of the product obtained as a result of these experiments at a price to be fixed by himself, instead of "at the market price of such product."

Reappropriation for potash investigations and demonstrations.—The item reappropriating the unexpended balance of an appropriation of \$175,000 carried in the agricultural act for 1917 has been omitted, as it is expected that the full amount will be expended during the current fiscal year and a new item providing for the continuance of the potash investigations during 1919 has been submitted in these estimates.

BUREAU OF ENTOMOLOGY.

Introductory paragraph, general expenses.—New language has been added to this paragraph for the purpose of providing specific authority to demonstrate the results of the investigations and experiments conducted under the several general expense items of the bureau.

Gipsy and brown-tail moth investigations.—This paragraph has been amended by omitting the clause providing for medical supplies and services and other assistance necessary for the immediate relief of injured employees, in view of the passage by Congress of the compensation act approved September 6, 1916. The language in reference to the nursery-stock law also has been slightly changed, so that the amendment to section 8 of this law, included in the agricultural act for the fiscal year 1918 will apply to this paragraph.

DIVISION OF PUBLICATIONS.

Horses and vehicles, and their maintenance.—The language of this item has been broadened so as to authorize the purchase and maintenance of motor trucks.

BUREAU OF CROP ESTIMATES.

Introductory paragraph, general expenses.—The proviso relating to the printing of the Monthly Crop Report has been omitted, as it is continuing legislation.

RENT IN THE DISTRICT OF COLUMBIA.

Rent of buildings, Department of Agriculture.—The proviso constituting a joint committee of the House and Senate to investigate the floor-space requirements of the Department of Agriculture in the city of Washington, annual rentals, lands available for the erection of Government-owned buildings, etc., has been omitted.

STATES RELATIONS SERVICE.

Administration of the Hatch, Adams, and Smith-Lever acts and administration of insular experiment stations.—This paragraph has been amended so as to provide authority for the payment of necessary administrative expenses incident to the proposed establishment and maintenance of an experiment station on the Virgin Islands of the United States.

Insular experiment stations.—New language has been inserted in this paragraph relating to the establishment and maintenance of an experiment station on the Virgin Islands. The immediately available clause providing \$10,000 for the establishment and maintenance of an experiment station in the Matanuska Valley, Alaska, has been omitted, as the present appropriation will probably be sufficient to carry the work through the fiscal year 1918.

BUREAU OF PUBLIC ROADS.

Change in name of bureau.—It is proposed to change the name of the Office of Public Roads and Rural Engineering to "Bureau of Public Roads." This change is in the interest of simplicity and convenience and is justified by the importance of the work and the size of the organization.

Rural engineering investigations.—New language has been added to this paragraph making \$35,900 immediately available upon the passage of the act. This sum is needed in order to quickly and adequately further the department's efforts looking to the development of efficient farm machinery.

BUREAU OF MARKETS.

Market reports on fruits and vegetables.—The \$40,000 immediately available proviso under this subappropriation has been omitted.

Enforcement of the United States grain-standards act.—A proviso has been added to this paragraph amending section 6 of the United States grain-standards act of August

11, 1916, so as to remove certain limitations which have prevented the Secretary of Agriculture from entertaining jurisdiction in many appeals, which might otherwise have been heard, from inspections made by licensed inspectors, and generally to simplify the procedure in taking and hearing appeals under the act.

FEDERAL HORTICULTURAL BOARD.

Enforcement of the plant-quarantine act.—The language of this paragraph has been amended so as to cover all revisions in the plant-quarantine act already effective and which may be made in the future.

Amendment to section 8 of the plant-quarantine act.—This paragraph has been omitted as it is continuing legislation.

MISCELLANEOUS.

Passenger-carrying vehicles.—This paragraph has been amended so as to exclude motor boats from its provisions. The matter regarding the exchange of vehicles also has been omitted as it is continuing legislation.

Eradication of foot-and-mouth and other contagious diseases of animals.—Minor changes have been made in this paragraph in order to make available for expenditure during the fiscal year 1919 any unexpended balance of an appropriation of \$2,500,000 carried in the agricultural act for the fiscal year 1916.

part 6

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

**LIVE-STOCK PRODUCTION IN CANE-SUGAR AND
COTTON DISTRICTS**

**LIVE-STOCK PRODUCTION IN SEMIARID AND
IRRIGATED DISTRICTS**

THURSDAY, JANUARY 10, 1918



**WASHINGTON
GOVERNMENT PRINTING OFFICE
1918**

AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES.

Thursday, January 10, 1918.

The CHAIRMAN. On page 202 of the Book of Estimates we have a few small items which ought to take only a few minutes.

Mr. RAWL, I wish you would tell us just as briefly as you can a little bit of the work you are doing under item 3, on page 202, your Louisiana station.

LIVE-STOCK PRODUCTION IN CANE-SUGAR AND COTTON DISTRICTS.

FURTHER STATEMENT OF MR. B. H. RAWL, CHIEF OF THE DAIRY DIVISION, BUREAU OF ANIMAL INDUSTRY, UNITED STATES DEPARTMENT OF AGRICULTURE.

Mr. RAWL. Last year approximately \$41,000 was spent on the live-stock work and \$18,000 for educational work. Would you like to have me review these expenditures to date?

The CHAIRMAN. No; just a brief résumé of what you are doing and what you propose to do. I think that will be sufficient.

Mr. HAUGEN. What did you do with the \$41,000?

Mr. RAWL. That was spent for buildings, labor, salaries, miscellaneous equipment, and live stock in the operation of the station.

Mr. HAUGEN. What kind of buildings did you erect?

Mr. RAWL. I can read you a list of the buildings.

Mr. HAUGEN. Most of the important ones—the most expensive.

Mr. RAWL. The work of this station is divided into four projects—for horse and mule work, hog work, beef-cattle work, and dairy work—and then a separate account, called "Administration," includes all items of general management.

Mr. HAUGEN. What is the expense of each?

Mr. RAWL. Of these departments?

Mr. HAUGEN. No; I mean each building—the most expensive ones.

Mr. RAWL. There is a small group of buildings for each one of these projects, consisting of barns, sheds, some cottages, etc., and the necessary equipment for carrying on that sort of work, all of which I have set out in a statement here.

Mr. HAUGEN. What are the materials used? Let us find out the character of the buildings and the cost of the buildings.

Mr. RAWL. For administration we have two cottages, one costing \$3,050.15 and another \$2,491.30, an office building that cost \$1,410.04, and a well house that cost \$303.73.

For the horse and mule work we have a barn costing \$2,239.66, a jack shed costing \$132.19, hay barracks costing \$923.64, a tool shed costing \$1,009.01, and two negro cottages that cost \$1,232.78.

For the beef-cattle project we have a barn that cost \$1,611.40 and another that cost \$2,708.05, two negro cabins that cost \$1,232.78, four concrete silos costing \$952.40, a stave silo that cost \$671.01, and a wooden-hooped silo that cost \$189.21. All silos are under one roof, which cost \$417.16.

Mr. HAUGEN. You say \$900 each for the four concrete silos?

Mr. RAWL. No, sir; for all four.

Mr. HAUGEN. What material did you use in these buildings?

Mr. RAWL. The buildings are all made of wood—except the four silos—wood on concrete foundation.

Mr. HAUGEN. Is the land owned by the Government?

Mr. RAWL. The land is owned by the State and deeded to the Government. Shall I complete the list of buildings, with the cost of each?

Mr. HAUGEN. No. I asked for the most important ones—the most expensive.

Mr. RAWL. That makes the group of buildings for the horse and mule project \$5,537.28, for the beef-cattle project, \$7,782.10, for the dairy project \$8,661.74—that is, including the dairy barn, the feed house, the calf house, and the cottage. The hog project is \$3,295.36.

The CHAIRMAN. Suppose you print that statement in the record, Mr. Rawl.

Mr. RAWL. All right.

(The statement referred to follows:)

Statement showing buildings constructed at the live-stock experiment farm at Iberia, La., with the cost of each:

Administrative:		Cost.	Dairy and hog project:		Cost.
Cottage I---	\$3,050.15		Cottage A--	\$2,710.51	
Cottage K--	2,491.30		Dairy barn -	2,184.77	
Office -----	1,410.04		Feed barn--	1,146.63	
Well house--	303.73		Milk house -	505.70	
		\$7,255.00	Bull and calf barn -----	1,390.69	
Horse and mule project:			Negro cot-tage -----	616.39	
Horse and mule barn--	2,239.66		Concretewalk	107.05	
Jack shed --	132.19				\$8,661.74
Hay bar-racks ----	923.64		Hog project:		
Tool shed --	1,009.01		Cottage B --	2,114.73	
Negro cot-tages (2)-	1,232.78		Hog feed house ----	177.49	
		5,537.28	Negro cot-tage -----	616.39	
Beef-cattle project:			Hog cots—		
Beef - cattle barn No. 1-	1,611.49		G a b l e r o o f (12) -	247.80	
Beef - cattle barn No. 2-	2,708.05		S h e d r o o f (1) --	18.65	
Negro cot-tages (2)-	1,232.78		Ashaped (10) -	120.30	
Concrete si-los (4)----	952.40				3,295.36
Stave silos (2) -----	671.01		Total for build-ings to date (Dec. 1, 1917) -----		32,531.70
Wooden hoop (1)-----	189.21				
Roof of silos	417.16				
		7,782.10			

Mr. HAUGEN. Your statement will give the number of cattle and hogs and other stock on hand?

Mr. RAWL. Yes. I have not the inventory here, but if you wish will insert it in the record.

(The statement referred to follows:)

Inventory of live stock at the Iberia (La.) live-stock experiment farm (to July 1, 1917):

Beef cattle:	Number.	Fattening hogs—Continued.	Number.
Bulls, pure-bred Hereford.	2	Sows-----	10
Cows, pure-bred Hereford.	4		24
Cows, grade Hereford----	20	Horses:	
Cows, native-----	20	Stallion-----	1
Calves, suckling-----	12	Jack-----	1
Heifers, grade Hereford--	14	Gelding-----	1
Heifers, native-----	6	Brood mares-----	11
Steers, grade Hereford----	5	Mules-----	6
Steers, native-----	11	Mule colts, 2 years old----	4
	94	Mule colts, yearling-----	6
Hogs:		Mule colts, suckling-----	8
Pure-bred Duroc Jersey--	1		33
Sows, pure-bred Duroc		Dairy cattle:	
Jersey-----	7	Bull, pure-bred Jersey----	1
Sows, half Duroc Jersey--	3	Cows, pure-bred Jersey----	11
Sows, native-----	2	Cows, grade Jersey-----	16
1916 fall pigs-----	100	Heifers, pure-bred Jersey--	1
1917 spring pigs-----	134	Bull calf, pure-bred Jer-	
	247	sey-----	1
Fattening hogs:			30
Gilt-----	1		
Shoats-----	13		

This year, up to date, we have returned or have on hand in the process of returning to the Treasury about \$7,000, and I think at the end of the year, when the sales are all made, there will be something like \$15,000 or more returned to the Treasury for the present year. The farm has been operated only two years and has not gotten fully under way yet, but I believe we can expect to return \$20,000 or more a year to the Treasury.

Mr. HAUGEN. Is all the stock sold and all the proceeds turned into the Treasury?

Mr. RAWL. All the proceeds are turned into the Treasury except where the animals are exchanged.

Mr. HAUGEN. Do you do quite a good deal of exchanging?

Mr. RAWL. Yes; particularly in the case of steers. We have exchanged fat steers for feeders. We are getting the place pretty well stocked now.

As to the character of the work—bearing in mind the four subdivisions—there are two large problems under way in connection with the beef-cattle project. One is the production of feeders under local conditions there, the cost of producing them and the character of them; the other is finishing cattle for market. Primarily, the finishing problem relates to a comparison of the different kinds of feeds that are available, including corn, sorghum, Japanese cane, sugar-cane tops, whole sugar cane, and others. Two series of this experiment have been run and another is under way at the present time. There are about 50 head of grade cattle and scrub native cattle being bred, and the cost of producing these feeders under local conditions there is being determined. Of course, the older group of

calves is just about a year or a year and a half old at the present time.

Mr. HAUGEN. All of this is practically a duplication of what is being done at other stations?

Mr. RAWL. No, sir.

Mr. HAUGEN. Is it not a duplication of the work we are doing out here in Maryland?

Mr. RAWL. Perhaps to a certain extent, although the conditions of the Gulf coast regions are decidedly different from the conditions here, the feeds are different to some extent, and there are some very large regional problems that are being studied.

Mr. HAUGEN. Will you explain somewhat in detail as to the necessity of conducting two stations which duplicate one the work of the other?

Mr. RAWL. This station in Maryland and the one in Louisiana?

Mr. HAUGEN. Yes; or any other station.

Mr. RAWL. Very largely for the reason that the conditions—the crops, climate, rainfall, parasites, etc.—are essentially different.

Mr. HAUGEN. You do not make a study of parasites of plants and those sorts of things? That is not your study?

Mr. RAWL. No, sir; but we do make a study of the utilization of plants in animal production and of the effect of parasites on animal production. For instance, the effect of mosquitoes on animals of different grades.

Mr. HAUGEN. Are not the mosquitoes pretty much the same here as there?

Mr. RAWL. There are practically none here. That is being considered in connection with our breeding, the question of bringing in some of the animals in the fall and some in the spring.

Mr. HAUGEN. What are they doing in the experiment stations down there?

Mr. RAWL. They are doing similar work, but on a smaller scale.

If there is nothing further regarding the beef work, I will say that the hog work is going along nicely. About 250 head of hogs were raised this year, and there again it is the question of utilizing local feeds—

Mr. ANDERSON. What are you trying to find out—whether the hogs will eat the kind of feed they have down there, or what?

Mr. RAWL. We are trying to find out which of the feeds there are best for the hogs and how best to make hog production a successful and profitable industry for that region.

Mr. HAUGEN. And teaching the hog?

Mr. RAWL. Sometimes the hog has to have a little teaching.

Coming now to the mule work, our investigations have shown that it costs about \$102 to produce a mule colt to the age of 2 years. From the result thus far secured we are led to believe that if a mule colt of like value of those on this farm can be produced every other year the utilization of mares in that region where they can be handled will be as economical as mules.

These are some of large regional problems in the live-stock industry in that section which must be worked out at the station if the industry is going to be developed rapidly.

Mr. HAUGEN. The cost of the mule, of course, varies according to the price of its feed?

Mr. RAWL. Yes.

Mr. HAUGEN. Corn at high prices will increase the cost of the mule?

Mr. RAWL. Yes, sir.

Mr. HAUGEN. It is not necessary to study that problem, is it?

Mr. RAWL. It is; because the mule industry in this country is a negligible industry. If it is possible to raise mules, cattle, and hogs there in a large way, that whole region can be made to contribute very largely to the live-stock supply of the Nation.

Mr. HAUGEN. Yes; and that very same thing can be studied over in Missouri or any of these States.

Mr. RAWL. No; for the reason that conditions are different.

Mr. HAUGEN. Taking into consideration the cost of whatever you feed the mule, of course.

Mr. RUBEY. We do not need it in Missouri; we know how to raise mules there.

The CHAIRMAN. Anything further, gentlemen? Take up item No. 4; your live-stock work in the semiarid and irrigated lands of the western United States; including the purchase of live stock, etc. How many stations have you now—two or three?

LIVE-STOCK PRODUCTION IN SEMIARID AND IRRIGATED DISTRICTS.

Mr. RAWL. We have animal-husbandry work, which is devoted largely to hog production, on four stations, for which \$11,000 is being expended. The dairy work of these stations has \$29,000. Two stations have been completed, one of which is in operation and the other is practically in operation, and a third station will be begun as soon as feasible. The increased cost of building material and equipment, of course, has made our appropriations for this work insufficient. For the Ardmore station the buildings have cost \$14,937.53, this amount including a two-story dairy barn, an open shed, silos, milk and ice house, and other buildings. I will attach a statement showing all the buildings, with the cost of each. The cost of the buildings at Huntley, Mont., to date has been \$13,311.30, and the plant is practically completed.

The Ardmore station is in operation and the Huntley station will be shortly. The third station, at Dalhart, Tex., is just being begun. It is in the Panhandle, in the northwestern part of the State.

The CHAIRMAN. Are the conditions there semiarid?

Mr. RAWL. Yes, sir. Two of these stations are in the semiarid territory and the other, at Huntley, is in an irrigated section. If there are any further details desired, I have all the figures here.

Mr. HAUGEN. I would like to know something about the character of the buildings and the cost of what you are doing.

Mr. RAWL. At Ardmore the total building cost last year and this year to December 1 was \$14,155.19. The equipment was \$3,350; cattle, \$3,615.31; travel for last year, \$675.40; and miscellaneous for 1917, \$415.32. That is the total expenditure at Ardmore to date on building, equipment, and cattle, and for 1917 on the balance.

Mr. HAUGEN. How much was the cost of the barn?

Mr. RAWL. I have not the figure here. It is a two-story barn, the hay overhead and the cattle underneath, with a calf barn and an open shed for the young stock and the bulls, etc., and a milk house and an ice house combined.

Mr. HAUGEN. Can you approximate the total cost?

Mr. RAWL. That total equipment is approximately \$14,000.

Mr. HAUGEN. But that is rather indefinite. When we get on the floor of the House they will be asking questions about this. They will want to know if we are putting up a \$7,000 barn on the desert, and that is a very proper question, it seems to me.

Mr. RAWL. The barn cost a great deal more than we had expected it to cost, on account of the increased prices of everything. It is a good barn, though, with hay mow overhead and a place for the cattle underneath. May I include that total in the record?

Mr. HAUGEN. I think it is very proper that it should go in.

Mr. RAWL. I shall be very glad to include each item of cost.

Mr. ANDERSON. Is that structure of wood or concrete?

Mr. RAWL. It is a wooden structure and includes a silo and the necessary equipment for running the plant. Labor is at a very high price, and lumber is also. We have done the best we could to get good substantial buildings.

The CHAIRMAN. Suppose you insert in the record the details of the expenditures on the buildings at each of these places.

Mr. RAWL. I will.

(The statements referred to follow:)

Statement showing cost of buildings erected at the Ardmore, S. Dak., field station in connection with experiments in live-stock.

Buildings:		Buildings—continued.	
Dairy barn	\$5,652.93	Milk-house shed	\$118.46
Milk and ice house	2,196.01	Silo shed	114.16
Stock shed	1,222.88	Concrete water tanks	81.50
Stave silo	529.86		
Concrete silo	653.02	Total to Jan. 15, 1918	14,937.53
Cottage	4,368.71		

Statement showing cost of buildings erected at the Huntley, Mont., field station in connection with experiments in live-stock production.

Buildings:		Buildings—continued.	
Dairy barn	\$5,789.48	Stave silo	\$718.58
Milk house	754.01	Concrete silo	857.59
Stock shed	1,367.52		
Herdsman's house	3,824.12	Total to Jan. 15, 1918	13,311.30

Mr. HAUGEN. I should think that a six or seven thousand dollar barn would look much out of proportion out there in the desert.

Mr. RAWL. It is economical to have substantial, good buildings. You have got a lot of men in Iowa who are successful dairymen who have barns just as good as we have built there. It is a wooden building, well ventilated, well lighted, and well constructed throughout.

Mr. ANDERSON. You would not recommend that a man going into the dairy business out there should build a barn at that cost, would you?

Mr. RAWL. No, sir; because dairying is not established for that region. This plant is for the purpose of determining the possibilities for dairying in that section. When that is done farmers would be warranted in building such a plant. Many farmers require several years to complete their building, but for our work it seemed wise not to have the work handicapped but to finish up the plant and put it in shape best suited for the work that is to be done there.

Mr. ANDERSON. It seems to me that the purpose of these experiments ought to be to demonstrate a method of accomplishing some-

thing under the conditions that are likely to exist there or do exist there now. What is the value of an experiment conducted under conditions that can not possibly be duplicated by any body in the district?

Mr. RAWL. I think they can be duplicated. The purpose of this work is to establish dairying in that region—to establish the methods for dairying in that region. If dairying can be carried on successfully there with the crops that can be grown, I have no doubt that the successful farmers will duplicate this equipment in the course of time. Dairy buildings are expensive. We have worked for years trying to reduce their cost, and I would like, just as well as anybody, to put up a dairy equipment that is sufficiently sanitary that offers the proper protection for the animals in the way of ventilation and light, and that is sufficiently convenient to save labor—I should like exceedingly to find some way to accomplish all these purposes for less money than that for which we or any farmers have been able to do it in the past.

Mr. HAUGEN. You do not contend that a practical man would put up a \$7,000 barn to house \$3,500 worth of stock?

Mr. RAWL. No, sir; but this is our beginning. We expect to produce animals some of which will be worth one-half of that for a single animal.

Mr. ANDERSON. Is there any market for dairy products in the vicinity of this region in which you are working?

Mr. RAWL. There are creameries in the region, though not immediately in the vicinity of this station; that is, not within driving distance of the station. That is not the case with Huntley, however. Huntley has a market at Billings, and there are also one or two cheese factories and possibly one creamery in the valley, within driving distance.

Mr. HAUGEN. To what extent are the dairy herds decreased or depleted?

Mr. RAWL. Over the country generally?

Mr. HAUGEN. Yes.

Mr. RAWL. In some localities apparently there has been some decrease. In others it is not apparent. The price of dairy products has been rising, and that is helping to keep the cattle on the farms. The last report of the Bureau of Crop Estimates shows an increased number of dairy cattle during the past year.

Mr. HAUGEN. I have been told that in the dairy districts of Illinois and throughout the Northwest they are not buying any dairy cows and that they have been slaughtered. They simply go to the butcher for slaughter.

Mr. RAWL. I have not learned that first-class dairy cattle, particularly fresh cattle, have been slaughtered. I have heard that stated but in no case which we have investigated did we find that to be so.

Mr. HAUGEN. A great many of them have not, of course; the highest priced or registered ones.

Mr. RAWL. Culling is being done. People are reducing their herds perhaps more now than usual. We have heard a great many reports of good animals being sold, but as to first-class dairy cows going to slaughter, particularly when fresh, we have no information to that effect.

Mr. HAUGEN. They are in the yards at South St. Paul and Chicago. They have shipped them there and they have been sold for beef. What is the reason for that?

Mr. RAWL. Some of the farmers are now reducing their herds or may be selling their entire herds.

Mr. HAUGEN. No; that is not the reason. I think the labor question runs into it. The expense of labor and forage is too great.

Mr. RAWL. That may be the reason why farmers are selling them, but if they are being sold it is because some of the farmers are reducing or else going out of business entirely. We do not believe that this has occurred to the extent that has been reported in many instances.

Mr. HAUGEN. My understanding is that labor can not be had, and it requires skilled labor to handle a dairy herd.

Mr. RAWL. Of course, that is a question that varies in the different localities.

Mr. HAUGEN. And, of course, the cost of keeping the herd.

Mr. RAWL. I feel that this work in live-stock production in the semiarid and irrigated districts is all fundamentally good work. I feel that it is of the utmost importance to carry this work along.

Mr. HAUGEN. Anything to encourage dairy production, of course, is a good work; but we should also keep an eye on economy.

Mr. RAWL. I am not prepared to speak for the crop-production side of the work in the dry-land regions. I do not know anything about it. That phase of the subject is being handled by the Bureau of Plant Industry; but if crops can be produced reliably and inexpensively enough to make dairying succeed, we are going to do the very best we can to establish the methods and to lead the way, and we are organizing with all the vigilance we can to do this in a way that will produce results.

Mr. HAUGEN. Are you cooperating with the Bureau of Plant Industry?

Mr. RAWL. Yes. This work is handled by a committee of the two bureaus; that is, the general plan of the work is reviewed by the committee and approved by it. It is a joint matter, but the live-stock end of it is naturally in the Bureau of Animal Industry; that is, when a plan is made the live-stock part of that plan is being carried out in the Bureau of Animal Industry.

Mr. HAUGEN. Are you experimenting with the various plants?

Mr. RAWL. Yes. The experimental work is just starting, and we are beginning a comprehensive series of experiments adapted to the two regions. In the irrigated region one of the important questions to be determined is whether or not irrigated pasture can be used successfully. We know what the land and the water costs, and the question is whether we can maintain fields there under water that will produce feed enough to warrant using the land for grazing purposes.

Mr. HAUGEN. Has not that been thoroughly tested out?

Mr. RAWL. No, sir; it has not. It has been tried in only a very few cases.

Mr. HAUGEN. I thought Jim Hill thoroughly tested that out 20 or 30 years ago?

Mr. RAWL. Not that I know of. His interests have been very largely along the railroad up there.

Mr. HAUGEN. I know he told a very interesting story about it and the results.

Mr. RAWL. The use of irrigated land as pasture?

Mr. HAUGEN. Yes.

Mr. RAWL. I did not know of that. The Bureau of Plant Industry has been interested for years in the question of utilizing these irrigated lands for grazing purposes.

The CHAIRMAN. Anything further, gentlemen? If not, we are very much obliged to you, Mr. Rawl.

On January 4 the Secretary of Agriculture wrote a letter to me as chairman of the committee, making certain suggestions touching some of the employees in the Weather Bureau, and I would like to have that statement go into the record for the benefit of the committee.

(The letter referred to follows:)

DEPARTMENT OF AGRICULTURE,
Washington, January 4, 1918.

Hon. A. F. LEVER,

Chairman Committee on Agriculture,
House of Representatives.

DEAR MR. LEVER: In the estimates for 1919 certain proposals were made for increasing the salaries of some of the employees in the mechanical shops of the department. No provision was made, however, for adjusting the compensation of mechanics in the Weather Bureau. The conditions with reference to the mechanical force in that bureau are essentially the same as those which obtain in the central mechanical shops of the department. Because of the higher rates of pay offered by private employers it is exceedingly difficult to secure competent mechanics or to retain those already in the service at the salaries which the Weather Bureau or the department at present is able to pay. I have canvassed this situation very carefully and desire to suggest, for the consideration of the committee, that the estimates of the Weather Bureau, pages 21 and 22 of the committee print, be changed to read as follows:

Item No.:

(20)	12 printers or compositors, at \$1,200 each-----	\$14, 400
(21)	Omit.	
(22)	Omit.	
(23)	4 folders and feeders, at \$840 each-----	3, 360
(24)	2 instrument makers, at \$1,440 each-----	2, 880
(26)	Omit.	
(27)	4 skilled mechanics, at \$1,200 each-----	4, 800
(28)	9 skilled mechanics, at \$1,000 each-----	9, 000
(29)	Omit.	
(30)	Omit.	
(31)	4 skilled artisans, at \$840 each-----	3, 360
(32)	1 engineer-----	1, 500
(33)	Omit.	
(37½)	1 repair man (submitted)-----	1, 000
(38)	3 repair men, at \$840 each-----	2, 520

The foregoing changes will involve the following salary increases and readjustments:

Item No.:

(21)	6 printers or compositors, \$1,080 to \$1,200 (increase of \$120 each)-----	\$720
(22)	5 printers or compositors, \$1,000 to \$1,200 (increase of \$200 each)-----	1, 000
	(Items 21 and 22 are combined with item 20, which is changed to read "12 printers or compositors, at \$1,200 each.")	
(23)	4 folders or feeders, \$720 to \$840 (increase of \$120 each)-----	480
(25)	1 instrument maker, \$1,300 to \$1,440-----	140
	(This place is added to item 24, which is changed to read "Two instrument makers, at \$1,440 each.")	

Item No.—Continued:

(26) 1 instrument maker, \$1,260 to \$1,300-----	¹ \$40
(This place is added to item 25, which remains unchanged, since 1 instrument maker, \$1,300, is transferred from this item to item 24.)	
(28) 1 skilled mechanic, \$1,000 to \$1,200-----	200
(This place is added to item 27, which is changed to read "4 skilled mechanics, at \$1,200 each.")	
(29) 1 skilled mechanic, \$840 to \$1,000-----	160
(30) 1 skilled mechanic, \$720 to \$1,000-----	² 280
(31) 2 skilled artisans, \$840 to \$1,000 (increase of \$160 each), with change of title to "skilled mechanics"-----	320
(33) 1 fireman and steam fitter, \$840 to \$1,000, with change of title to "skilled mechanic"-----	100
(These five places under items 29, 30, 31, and 33, are combined with item 28, which is changed to read "9 skilled mechanics, at \$1,000 each"; and item 31 is changed to read "4 skilled artisans, at \$840 each.")	
(32) 1 engineer, \$1,300 to \$1,500-----	200
(38) 1 repair man, \$840 to \$1,000-----	160
(This change involves the creation of a new statutory place, following item 37, and item 38 is changed to read "3 repair men, at \$840 each.")	
Total -----	3,800

I am inclosing a memorandum prepared by the Chief of the Weather Bureau which sets forth in detail the reasons for the suggested changes.

Very truly, yours,

D. F. Houston, *Secretary.*

Memorandum from the Chief of the Weather Bureau to the Secretary of Agriculture relative to the duties, qualifications, and service records of mechanics recommended for promotion:

Items 20, 21, 22.—In the estimates for 1918 it was recommended that the salaries of all printers receiving \$1,080 per annum be increased to \$1,200 per annum. This recommendation, however, was not favorably acted upon by the committee, in view of the insertion of the provision authorizing a horizontal increase of 5 and 10 per cent in the salaries of all employees below \$1,800. It is now proposed to promote six printers at \$1,080 and five at \$1,000 to the \$1,200 grade, which, I believe, is the lowest salary scale for this class of mechanics at which we can expect to get satisfactory service and men. It is almost impossible to secure printers for \$1,000 per annum. There are now three vacancies. One of them exists at New Orleans, and we have been endeavoring for four months to fill it, without success.

Item 23.—Item 23 provides for four folders and feeders at \$840 per annum in lieu of four at \$720. These men are employed in our printing office in Washington. Three vacancies now exist and we are unable to fill them, even with temporary employees, because of the low compensation. Our printing work is crippled in consequence. The Civil Service Commission has certified a number of eligibles, but, in practically every instance, the offers of appointment were declined because the men were unable to move to Washington and support themselves and families on \$60 a month (\$66 a month with the 10 per cent added).

Item 24.—This item contemplates an increase in the number of instrument makers at \$1,440 from one to two, and will provide for the promotion of one of the instrument makers now receiving \$1,300. The instrument maker involved in this case is a man of exceptional ability in the construction of apparatus of a delicate character. It would be practically impossible under present conditions to fill his place, as similar work in the commercial world commands a much higher compensation. The character of his duties is such as fully to justify a salary of \$1,440 per annum.

Items 25 and 26.—No change is made in Item 25, which provides for three instrument makers at \$1,300. Provision is made for one of the men now occupy-

¹ Since this place represents a transfer from the lump fund for "aerological stations," it is proposed to further reduce the lump fund by \$40 to provide for this promotion. If this is done, the promotion will involve no actual increase in the total appropriation.

² No promotion involved; the \$720 place is now vacant; an additional carpenter is urgently needed, but it is impossible to secure a competent man at less than \$1,000.

ing this grade in item 24, and his place will be filled by the elimination of item 26 (1 instrument maker, at \$1,260) and the promotion of the employee now occupying this place to \$1,300. The employee in question is an exceptionally capable workman. He was appointed at \$1,260 per annum on the lump-sum (aerological stations) roll, because it seemed inadvisable to appoint him at \$1,440 per annum, the next higher lump-sum grade. It did not seem just to the trained men already in the service who were performing similar work to appoint him at a higher rate of pay than they have been receiving for a number of years. The lump fund for aerological stations, under general expenses, can be further reduced by \$40 to meet this promotion.

Item 27.—This item provides for one additional skilled mechanic at \$1,200 per annum. It is proposed to promote the skilled mechanic at \$1,000 per annum, now provided for in item 28, to this place. This employee is a carpenter and cabinetmaker of exceptional skill. He has been in the Weather Bureau for 20 years. It would be difficult to fill his place. He was offered a position with higher pay a short time ago, but declined it because of his long service in the Weather Bureau and his hope that action might be taken to give him compensation commensurate with his work. This is an unusually worthy case.

Items 29, 30, 31.—Changes in these items will eliminate 1 skilled mechanic at \$840 (item 29), 1 skilled mechanic at \$720 (item 30), and 2 of the 6 skilled artisans at \$840 (item 31). It is proposed to promote each of them to the position of skilled mechanic at \$1,000 each.

The skilled mechanic at \$840 (item 29) is employed at Drexel, Nebr., in connection with the Weather Bureau aerological work. He is a carpenter and kite maker, the latter work requiring long experience, unusual skill, and a knowledge of the behavior of kites in the air. His duties have become especially exacting because of the increase of our upper-air work. We would be embarrassed if he should leave the service, as it would require a long time for even the most skillful carpenter to become proficient in kite making. He has been in the Weather Bureau 14 years.

The position of skilled mechanic at \$720 (item 30) has been vacant for some time, as it has been impossible to secure a mechanic to serve at this compensation. We urgently need an additional carpenter in Washington, and \$1,000 per annum is the lowest compensation at which it will be possible to secure a man of even ordinary ability. If this recommendation is approved, no promotion will be involved, as the place will be filled by original appointment.

Item 31 provides for the promotion of two of the skilled artisans at \$840 to skilled mechanics at \$1,000 per annum. One of these men is a painter. He has been in the Weather Bureau nearly six years and is a very competent workman. His salary is too low for the work that he performs. The other man is doing mechanical work in our printing plant, which includes the operation of the rapid Harris press. In addition, he is a competent pressman and is occasionally called upon to perform press duties in the absence of the regular pressman and in emergencies. He has been in the Weather Bureau nearly 11 years.

Item 33.—One fireman and steamfitter at \$840 is omitted and provision made for this employee as a skilled mechanic, at \$1,000 (item 28). This case is a worthy one. While he is carried as a fireman and steamfitter, firing constitutes almost a negligible part of his duties. In addition to doing all of the steam-fitting and plumbing work in the Weather Bureau buildings in Washington, he is in charge of the power plant in the absence of the engineer. It is proposed to eliminate the grade of fireman and steam fitter and to substitute a place of skilled mechanic, which title will conform with the character of his duties.

Item 32.—This item provides for one engineer at \$1,500 instead of one at \$1,300. This will enable the bureau to give a promotion of \$200 to an especially capable man. He has entire charge of the heating, lighting, and power plant of the bureau, which provides heat and light for all the Weather Bureau buildings and power for the printing plant. He is, in fact, a chief engineer and a man capable of handling heating and power plants of any size. His compensation is below that given to other engineers of the Government having similar capacity and responsibility. Last year the Secretary approved the promotion of this employee to \$1,400 and a recommendation to this end was included in the estimates. However, it was eliminated by the committee on account of the 5 and 10 per cent increase.

Items 37½ and 38 provide for the reduction of the number of repairmen at \$840 from four to three and the inclusion of one repairman at \$1,000.

change will provide a promotion from \$840 to \$1,000 for the chief repairman of the telegraph lines extending from Port Angeles, Wash., to Tatoosh Island. This line is of unusual importance, because of our cooperation with the military and naval authorities. It is the only outlet for wireless communication and vessel reports from Tatoosh Island. In addition to being an excellent repairman, this employee is a telegraph operator and an expert in telegraph-line construction. Formerly his headquarters were at Port Crescent, Wash., where he was furnished quarters, fuel, and light, in addition to his compensation, but the abandonment of that station and its removal to Port Angeles resulted in his being deprived of quarters, fuel, and light, which was in effect a considerable reduction in his salary. The estimates for last year included a recommendation for the promotion of this employee to \$1,000, but the item was eliminated by the committee because of the 5 and 10 per cent provision.

(Thereupon, at 12.15 o'clock p. m., the committee adjourned.)

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part 7

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

—
BUREAU OF MARKETS
—

WEDNESDAY, JANUARY 9, 1918



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GOVERNMENT PRINTING OFFICE
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AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
January 9, 1918.

The committee met at 10.30 o'clock a. m., Hon. A. F. Lever (chairman) presiding.

BUREAU OF MARKETS.

The CHAIRMAN. The committee will come to order. Turn to page 175 of the Book of Estimates, and we will take up this morning the Bureau of Markets and ask Mr. Brand, chief of that bureau, to present the estimates.

STATEMENT OF MR. CHARLES J. BRAND, CHIEF OF BUREAU OF MARKETS, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Mr. Brand, glancing over your statutory roll, I find that you have no new places provided for except by way of transfer.

Mr. BRAND. All by way of transfer.

The CHAIRMAN. And at the same salary?

Mr. BRAND. At the same salary, and the lump sum has been reduced accordingly.

The CHAIRMAN. In all cases?

Mr. BRAND. In all cases.

The CHAIRMAN. With that statement, gentlemen, we will take up the lump-fund appropriations, on page 180. The first item is No. 60, for acquiring and diffusing among the people of the United States useful information on subjects connected with the marketing and distributing of farm and nonmanufactured food products and the purchasing of farm supplies, etc., \$292,240, an actual increase of \$32,900.

Dr. Brand, we have adopted the plan of asking the gentlemen presenting the estimates to outline briefly in each case what they have been doing this year with the appropriation; then what they intend to do with the money for the next fiscal year, and what they propose to do with the increase in each case. If you will follow that order, we will get along better.

Mr. BRAND. In this particular matter, Mr. Chairman, practically all the increase is to be devoted to the work with live stock and meats. The work under this item is the general marketing work of the bureau. It includes the cooperative marketing and purchasing work, of which you have heard in the past; the work on market grades and standards; the work on the marketing of dairy products; on

live stock and meats; and the work on transportation and storage. All those general lines of marketing work have been discussed before the committee in times past. During the past year we continued the activities that were explained in some detail prior to this time. We have extended our work in cooperative organization. The last time I told you in some detail of organizing the work of the Fruit Growers' Agency in the Pacific Northwest. Since that time we have assisted the Colorado growers to form a State-wide marketing organization. At the present moment we are working with the fruit and truck growers of Florida, trying to assist them in forming a strong central organization to deal with the marketing of their citrus fruits and their vegetable products. None of the increase goes into this work.

The work in market grades and standards, which has been explained to you before, has progressed very satisfactorily, so much so that when the Federal Reserve Board was ready to permit the member banks to make loans on potatoes we had our potato grades ready, and they are now being used as the basis of the loans of the Federal Reserve Board. We have worked out grades for numerous other products, including onions, apples, peaches, pears, and some of the smaller fruits. We have found in the country at large a desire to have that work continued and a very strong request for the national standardization of grades, more particularly of fruits. This work has all tended in that direction, and already five or six different States have adopted by action of their State legislatures the form of a law for the standardization of certain fruits that we have drafted. They are asking us to continue that work.

The work in the marketing of the other products has also proceeded in the same fashion. We have tried to consolidate what we were doing before, most of the work having been begun in the last fiscal year. We have opened a number of field offices, particularly in relation to the marketing of grain and hay and in the marketing of meat, dairy, and poultry products. Many persons in the trade have besought us very earnestly to take the place of some existing agencies, especially in the matter of furnishing information, and they have asked us to serve as a disinterested source of trade information.

We have extended those services very considerably and are carrying on all the investigational work upon which the changes are made in this item. With respect to the particular item—

Mr. ANDERSON (interposing). Before you leave that, I would like to ask what are you doing in connection with the live-stock industry?

Mr. BRAND. I was just about to say that that is the particular item for which the increase is to be used. We are carrying on a considerable number of projects for the live-stock industry. Perhaps one of the most important is the study of centralized live-stock markets. At the present time, practically all our beef cattle, three-fourths of our hogs, and five-eighths of our sheep pass through these great centralized markets. They have grown up under competitive conditions, not always on economical bases, but governed largely by the chance of the moment and the condition of the market. They have been very anxious that we should make a careful and disinterested study, including all the markets, with a view to make sug-

gestions as to how these centralized markets could better perform their functions.

In connection with that work, for instance, we carried on a very thoroughgoing study of the transportation of what is called the five-day market, the purpose of which is to uniform the receipts through the week. That work has now been brought to fruit by orders, after demonstration, putting in a five-day market. This market involves certain lines of railroad, shipping on certain days, and certain branch lines which ship on other days, in order to promote a uniform flow of live stock to the market.

Another class of work in connection with live stock has been the study of live-stock movements. The investigational work is already carried on under this item, but another item provides for the news service. We have succeeded in working out the methods whereby at the present moment about 226,000 of the 260,000 miles of railroads report nightly the movement of live stock at all places over their lines. These messages are received in code, are decoded, and then recoded and distributed, and the information is in the hands of markets as far west as Portland, Oreg., the next morning.

Mr. McLAUGHLIN. Are the railroads unwilling to do that?

Mr. BRAND. Very few of them.

Mr. McLAUGHLIN. At whose expense are these messages sent?

Mr. BRAND. The incoming messages are sent at our expense.

Mr. McLAUGHLIN. That is all you have; there are no outgoing messages?

Mr. BRAND. There are some outgoing messages, some of which are paid for by the people who receive them, and the others go to our own officers. All the information coming in is at our expense, but if you were a cattleman and wanted information we would send it to you at your expense. The railroads send it to us at our expense. About 1,250 of these railroad superintendents have been participating in this report.

Mr. McLAUGHLIN. What is that service of getting these nightly reports from the railroads costing?

Mr. BRAND. We now have a leased-wire system on which we handle this business. Just as an illustration of the cost I looked, last night, at one of the months for which we had complete figures; it happened to be the month of June. The total cost for that month was \$3,350, as I recall it. The Government rate on these same messages, had we paid for them at the Government rate, would have been a little in excess of \$10,000. In other words, the leased-wire system saves us about \$6,700. We are running very close cost records on all these matters, and you will be interested to know that the American Telegraph & Telephone Co. reported to us as much as 60 days ago that at the time we were handling over our wires a volume of information next to the Associated Press, and I might say that we are handling it at a very, very low cost. We have been working out our own codes, so that with 100 words we can transmit practically 1,000, and we believe we have developed a system which gives the maximum of information and the maximum of value for the money expended.

Mr. OVERMYER. Have there been losses of live stock recently on account of blocked traffic? I have read something about that.

Mr. BRAND. There have been some losses. However, they have dwindled a great deal in relative importance because of the very great losses in Texas due to the drought.

Mr. OVERMYER. I read some account of live stock perishing in the cars on account of congested traffic. I wondered if it was an isolated case?

Mr. BRAND. I think it is only in isolated cases. Our live-stock movement amounts, in round numbers, to 6,000 carloads a day. That is a huge amount. As a matter of fact, we have had in the past year something like 687,000 carloads of live stock reported to us by this service.

Mr. McLAUGHLIN. That is the total cars?

Mr. BRAND. Yes, sir.

Mr. McLAUGHLIN. Within what time?

Mr. BRAND. From February 19, 1917, as I recall it, to December 1, 1917. It will probably run about three-quarters of a million cars in a year. Just in passing, I may say that the fruit and vegetable movement reported under another item aggregates about the same total. So we have carried on these investigations that are necessary in order to work out this service under the investigational item, and we are also carrying on studies in cooperation with the Bureau of Animal Industry on the shrinkage of cattle in transit, also at the stockyards. You are also familiar with the problem at the stockyards. We have been asked by a great number of companies to give this matter a thorough investigation, with a view to determine what is the economic thing to do with reference to the work.

Mr. McLAUGHLIN. What you say about the number of cars of fruit and vegetables being approximately the same as the number of cars of live stock is interesting, inasmuch as fruit and vegetables are shipped only a part of the year, whereas live stock is shipped all the year around, practically every month.

Mr. BRAND. I suppose that in the case of fruit and vegetables we have not secured as high a percentage of reports. We are inclined to believe that about a million cars of fruits and vegetables moved, but it has been a little more difficult to get the perfect reporting that we have in the case of live stock, because so many more stations participate in the movement of fruits and vegetables.

Mr. ANDERSON. The institution of the five-day market with reference to live stock, resulting in move evenness of receipts, ought to have the effect of diminishing the daily fluctuations in the market. Has that been your experience? Has it been in operation long enough for you to tell?

Mr. BRAND. The matter has not proceeded far enough so that we can tell, Mr. Anderson.

Mr. ANDERSON. Have you made any investigation of the stockyards ownership in its relation to the packing plants?

Mr. BRAND. Under another item. In cooperation with the Federal Trade Commission we are now engaged in an investigation of that character. We have in the past, as a matter of fact, carried on a great deal of work along that line, and it has formed the basis of the investigations which are now under way. We proceeded as far as we could with the powers we had. You gave us some additional powers in the last bill and also gave the Federal Trade Commission an appropriation for the specific purpose, and we have two or three

groups of men working with the Federal Trade Commission groups on this matter.

Mr. ANDERSON. I wanted to ask you another question along a somewhat different line.

Mr. McLAUGHLIN. On that line, how much money has been expended on this investigation by you?

Mr. BRAND. Up to the present time I am unable to say absolutely. On account of the war emergency work we did not get that work started as promptly at the beginning of the fiscal year as we wished. Therefore, I am under the impression that, although half the year is gone, considerably less than half of the appropriation has been expended. The appropriation was \$50,000, and I am inclined to think that perhaps not over \$20,000 has been expended at this time.

Mr. ANDERSON. The question I wanted to ask you was this: Have you found that the organization of producers and shipping associations has resulted in attempts on the part of these associations to fix and maintain prices?

Mr. BRAND. Are you thinking now of the cooperative live-stock shipping associations?

Mr. ANDERSON. Not any more of those associations than any other.

Mr. BRAND. Generally speaking, have cooperative associations attempted price fixing?

Mr. ANDERSON. Yes.

Mr. BRAND. I would say that a large number of them have tried to, with signal failure, because they handle so small a proportion of any product that, even though they might be ambitious to do it, they are utterly unable to do it. Their minds naturally turn to that, as they think that this is the readiest cure for their ills, but, as a matter of fact, they soon find that that is not the most profitable direction for their efforts. They find that the introduction of better business methods, dealing in large quantities, the standardization of their grades, better packing, and the opportunities for employing good business management represent the advantages of organization rather than any opportunity to fix prices.

Mr. ANDERSON. I understand that there have been some successes in that direction, particularly where the article produced was for more or less local consumption. Take, for instance, in the case of milk or dairy products. There has been some success in that direction.

Mr. BRAND. The milk dealers the country over have felt that they were smarting under a very keen injustice, in that the prices for everything that they had to purchase have gone up anywhere from 100 to 300 or 400 per cent, whereas their product has not gone up more than 35 to 60 per cent, and in a number of cases they tried, as so many organizations have tried, the price-fixing method of salvation. They have given it up, I think, absolutely. They were rather hammered by the public press, a good deal of the hammering being quite unjust, in my opinion, because it did not take into account the exceedingly great increase of costs which they have been suffering.

Mr. ANDERSON. I suspect that they had some intimation from the Attorney General Office as well.

Mr. BRAND. They did. They had some very definite information.

Mr. McLAUGHLIN. When you are speaking of complaints that the price of milk was fixed by milk dealers, do you mean milk dealers or milk producers?

Mr. BRAND. Milk producers have organized quite as extensively as milk dealers, though much more recently. Milk distribution is quite thoroughly centralized. In New York 10 per cent of the dealers handle 90 per cent of the product. Of course, they have not succeeded in any such centralization as that.

Mr. McLAUGHLIN. The complaint as to the prices comes very largely from the producers, more so than from the dealers, does it not?

Mr. BRAND. Yes; that is very true, because the distributor aims to charge cost plus and comes out on it. A producer has to take what the market affords him, practically. He is able to sway it a little from time to time, but in a large sense he is compelled to take what the market offers.

Mr. McLAUGHLIN. Have you taken any part in these controversies between the dealers and producers of milk?

Mr. BRAND. We have tried to keep out of the controversies. We have tried to make a disinterested investigation of the distribution and costs of production and have tried to avoid the controversial phases. I think we have succeeded in keeping out of the controversies and in furnishing them with help and information that was of use to them.

Mr. McLAUGHLIN. When you learned facts, why should you keep out of the controversy?

Mr. BRAND. We preferred merely to publish the facts, make them public property, let them speak for themselves, and let those who were parties in interest do the controverting. That was our position, generally speaking. Since the organization of this bureau we have felt that our duties are disinterested toward all citizens, in so far as they are engaged in lawful pursuits, and in doing this we have succeeded in entering only a minimum of controversies.

Mr. McLAUGHLIN. Has your finding of fact been generally accepted?

Mr. BRAND. Yes; it has. I am quite confident in saying it has. I have here some letters which indicate the satisfaction with which our findings of fact have usually been received. Of course we can not possibly hope to satisfy everybody in all cases, but I should say that, by and large, we have.

Mr. McLAUGHLIN. From what class of people do the letters come?

Mr. BRAND. They come from all sorts of classes. In the case of the milk question they come particularly from producers; from gentlemen like Mr. Campbell, of Michigan, and Mr. Cooper, of New York.

Mr. McLAUGHLIN. What Mr. Campbell, of Michigan?

Mr. BRAND. Mr. Milo D. Campbell, who is the president of the Milk Producers' National Association.

Mr. McLAUGHLIN. I know him very well.

Mr. BRAND. And in this particular case we have had more commendation from the producers' side than from some others. However, in the fruit and vegetable business, particularly since the passage of what we now call the food-inspection law, in inspecting fruits and vegetables at the request of shippers we have had an enor-

mous number of commendations of that service, its accuracy, etc. That is another item.

Mr. ANDERSON. I want to ask you another question. Part of your increase is for the investigation of the distribution of live stock. My reading and experience leads me to believe that these investigations are not of much value unless they result in setting in force some economic law which in itself will result in some reform of the situation that is developed. I was wondering whether this investigation would be carried on with the view of determining some economic way of correcting whatever may be ascertained to be uneconomic in the distribution of live stock at the present time.

Mr. BRAND. Yes; we are aiming especially in this emergency to make every bit of the work that we do something that shall lead not so much to ultimate improvement as to immediate improvement. We try to make the work immediately useful and immediately productive of returns to the people.

Mr. ANDERSON. I can not see, myself, much hope of making an early redistribution of the live-stock industry under present transportation conditions.

Mr. BRAND. That has, of course, been a very serious limiting factor. Nevertheless, it has been possible to bring about considerable improvement. The type of information which we gain by our daily reports of the live-stock movement, which show the destinations by market of a large proportion of the movement with diversion privileges—that type of information has directly permitted the shifting of cars to the market which was barest and where the opportunity is best of getting a good price and an even distribution.

Mr. ANDERSON. Now, I think you are getting at what I have had in mind. Then, your investigation is directed more particularly to the distribution of the marketing of cattle than to the distribution of the industry itself?

Mr. BRAND. We are trying to do something in the other direction also. We are trying to bring about the location of plants where they are needed, and things of that sort. We try to be disinterested in our recommendations. For instance, in the chairman's State there has been quite a strong movement toward putting up municipal and local abattoirs—small central packing plants. We have tried to assist the people, but we have tried to get them to proceed carefully, so that the result would not be a lot of packing plants at points where they are not needed, with a feeling among the people that we were to blame for their failure.

Mr. ANDERSON. There has been a proposition for an appropriation to be directed toward a redistribution of the industry itself. For instance, it has been claimed, say, out in North Dakota, that the reason they have no large dairy industry out there is because they can not get dairy animals. Does this investigation have any relation to that proposition?

Mr. BRAND. We are carrying on another service which is calculated to distribute directly from one live-stock producing territory to another, instead of through the central markets, dairy cattle, beef cattle, stockers, and feeders. We are trying to get them to ship direct to southern Minnesota. We have succeeded already in bringing about a great deal of that direct movement. At the present time we are working under emergency funds with particular concentration

on the starving cattle in Texas, where hundreds of thousands are suffering, and hundreds dying weekly.

Mr. YOUNG of Texas. About how many head of cattle have been removed from that district?

Mr. BRAND. About 150,000 head have gone into the Southeastern States, where they have had velvet beans and other forms of feed. A very great proportion have gone into east Texas, where they do not suffer. A considerable number have gone into Oklahoma and Kansas and there distributed. Now we are trying to bring feed in, because a considerable number of cattle have become so weakened that it is impossible to move them. In trying to move them, as many as 10 have been found dead in the car.

Mr. RUBEN. Can you give us some idea of how many cattle have been moved out of Texas?

Mr. BRAND. The usual cattle population in this portion of the State of Texas is about 4,000,000; up to three years ago the usual population of that cattle territory was about 4,000,000. About six months ago it was estimated to have been reduced to about 2,000,000, and it is believed now that it is reduced to somewhere between a million and a million and a half. Some of that section has been without rain for 3 years and most of it for 18 months.

Mr. YOUNG of Texas. There are 144 counties in that State.

Mr. BRAND. An empire, practically.

The CHAIRMAN. Referring to Mr. Anderson's thought, I do not know whether he carried it to a conclusion or not. I do not know whether I caught just what Mr. Anderson had in mind, but I take it that he is trying to develop from you whether or not the investigations of the live-stock situation generally, in its movement into the packing plant, its movement out, and its handling within the packing concern, has brought you to any conclusions touching a rearrangement of the whole system that would bring about greater economy, and, if so, whether your present plan is to ask these people voluntarily to accept your suggestions; whether the time has now come, in your judgment, that these suggestions should be mandatory in the shape of a law? Is that what you had in mind, Mr. Anderson?

Mr. ANDERSON. I think that states it very well.

Mr. BRAND. I am not prepared to say that we have carried these investigations to a point where we could do as we have done in other cases—recommend specific legislation. In a number of directions we have determined suitable changes that have been adopted in many cases, but considering that the live-stock industry is the largest in the value of its product—I think it is next to the steel industry in the United States—it is such a very far-reaching question that it is a serious matter to make suggestions that would affect the whole industry at one time.

The CHAIRMAN. The committee appreciates that.

Mr. ANDERSON. I would like to ask one other question. I do not want to extend this discussion unduly. Up in our section there was, three or four years ago, a very strong movement for the establishment of cooperating packing plants. I know of one or two instances where there was a failure of the organization and one or two instances where there was a failure of operation. I was wondering whether any investigation had been made of any failures of that sort, to develop the fundamental reasons for the failures?

Mr. BRAND. Immediately upon the coming up of those requests we did make an investigation of all the existing cooperative packing plants, and particularly the one at Wausau, Wis., which has been cited so frequently, and which had such an excellent opportunity for success in some respects. We found that they had been unsuccessful, not because the principle was wrong but largely because the management had not been effective. There was another feature which was very undesirable from our point of view, and which forced us to take a less commendatory attitude than we would have wished, and that was the promotional way in which they were floated—stock-jobbing propositions. We believed in the principle but we could not approve of the method of carrying it out.

Mr. ANDERSON. I was just about to ask you that. My own guess was that the two propositions you have named were more responsible for the failures in the organization and in the operation than any other; that is, the promotional character of the institution of the industry, to begin with, and then the lack of suitable managerial influence.

Mr. BRAND. To some of these plants we have made recommendation of persons, trying to assist them in selecting men who would be able to pull the enterprise through. One of the quite successful small country packing plants was at Moultrie, Ga. Within the last year that has passed into the hands of one of the big packing companies.

The CHAIRMAN. I have been trembling for those in my own district. I hope they will not have the same fate as that institution of which you speak. That institution, I understand, was the one which was the inspiration of the plant at Orangeburg.

Mr. ANDERSON. Are those in your district handling both hogs and cattle?

The CHAIRMAN. Only hogs.

Mr. BRAND. Frequently they will build a packing plant and then go out and find how many hogs they have available for it. Sometimes they have to bring hogs from a long distance.

The CHAIRMAN. Your net increase is \$32,900. Part of this is really not an increase; but represents the transfer from the Bureau of Plant Industry of certain lines that they have been doing—work that is more in the nature of marketing than otherwise.

Mr. BRAND. That is the case, Mr. Chairman. By agreement with the Chief of the Bureau of Plant Industry, Dr. Taylor, we recommended to the Secretary the transfer of a considerable portion of the work which Mr. Powell originally inaugurated and with which you are all familiar, to the Bureau of Markets, because of the fact that it was so intimately related and was so largely marketing. We have continued the work; we have a joint project, so that all of the relationships are kept up and the work is carried on fully as effectively. In fact, I think there is a general feeling that it is being carried on more effectively because of its coordination with the other marketing activities of the bureau to which it relates. The transfer is in round figures \$21,000 of lump sum, as I recall it.

The CHAIRMAN. I want to call your attention to a matter which I called to the attention of some one yesterday and in which I think the department can be of service, and that is in connection with the motor-truck produce routes that the Post Office Department is putting into operation. It seems to me that you can be of special assist-

ance in organizing the people along that route into marketing associations, on the one hand—selling associations—and the people in the city from which the route emanates into buying associations, with a mutual intermediary or agent to take care of the situation. Have you given any thought to that?

Mr. BRAND. Yes; we call that our direct marketing work; and with a small portion of the funds that you appropriated under the food-production act we began a number of months ago to undertake that type of work. Under emergency funds we are going at that question rather more broadly than on a purely farm-products basis. We feel that it can be carried out successfully only if it is carried out on a package-freight basis. It is not going to be possible to get sufficient and regular tonnage for these routes unless it includes more than farm products. It will be necessary to carry the packages of merchants and things of that sort. We are working with the Post Office Department. Two of our men are now working out from Philadelphia with the officers of the Post Office Department on that matter.

The CHAIRMAN. I think your idea is right. I do not believe these produce routes would stand up if they are to take packages only from one end of the proposition, as it were. It must take "out packages" as well as "in packages." Is that the idea?

Mr. BRAND. Yes. It must have the volume in order to operate economically.

The CHAIRMAN. I do not see why it should not succeed in that way.

Mr. BRAND. The work briefly is this: There are a certain number of the States that have a high percentage of good roads, and we are planning to make the experiments in those States, thinking that there it may be possible to work out the proposition favorably. We are proceeding on that basis. We will take Ohio, for instance, Massachusetts, Maryland, southern California, and we are considering the area around Detroit, where they have a very large proportion of good roads to try this out.

Mr. ANDERSON. I know some sections of Ohio where it would be rather difficult to run a route of that kind.

Mr. BRAND. In northern Ohio there are a great many pikes and hard roads. That is the general principle upon which we are proceeding; we are trying it out first under favorable conditions, rather than trying it under unfavorable conditions and making a failure of it. We think there is an opportunity in this regard, particularly under the transportation conditions at the present time. Especially with reference to package freight the problem is really very serious.

The CHAIRMAN. I look upon it as the beginning of the greatest means of solving the farm problem that I have ever run across in my studies.

Mr. BRAND. We are starting out to get the truck companies to loan us the big trucks we will need. We have discussed it with some of their representatives and they believe they can furnish us with a train of trucks, each operating unit being independent. When spring comes we hope to put the matter more largely into effect. This cold weather, of course, has been bad for such work.

Mr. McLAUGHLIN. Do you mean the companies will supply the trucks without cost to you?

Mr. BRAND. That is what we asked them to do. In the end it is to their advantage. It is going to make a big market for them.

The CHAIRMAN. This is aside from this proposition, but it is an interesting development here.

Mr. BRAND. The next item for which an increase is recommended is the collection and distribution of information on fruits and vegetables.

The CHAIRMAN. Item 61?

Mr. BRAND. Yes: 61.

The CHAIRMAN. All right. Doctor: tell us a little about your work and then tell us about how you intend to use the increase.

Mr. BRAND. Last year when I reported to you we had 11 permanent offices open and had just closed our office at Baltimore, which is intended to be permanent, because that year we ran short of funds. This year we have extended the work and we have now practically 18 offices open. This increase is intended to provide for the permanence of those 6 additional offices. We have extended the work not only under our regular appropriation, but also under the special appropriation, and I am discussing now only those plans that we have under the permanent appropriation. We feel that we should operate these central offices for receiving and reporting information at at least 18 points during the coming year.

The CHAIRMAN. You have 12 now and you say you want 6 more?

Mr. BRAND. We have 12, and this will enable us to conduct 6 more permanent offices. We have reported during the past year on apples, peaches, strawberries, cantaloupes, potatoes, Texas onions, southern yams, and a few other commodities. We are planning to increase that number, and we are also planning to make the reporting service for the winter vegetables continuous. Hitherto we have stopped our service really before we ought to have stopped it. This year we have continued it right straight through the winter and plan to continue it through the present year, particularly with reference to the potato and apple and other important crops, and we will continue it in the South where the shipping of celery, lettuce, and other early vegetables is now beginning. So that this additional fund is now intended for the extension of those 6 additional offices, in order that we may continue the 18 which we are now operating.

The CHAIRMAN. Where are those located? Put the names in the record.

Mr. BRAND. Boston, New York, Philadelphia, Buffalo, Baltimore, Washington, Cincinnati, Cleveland, Chicago, Minneapolis and St. Paul are working as one, Omaha, Kansas City, New Orleans, Atlanta, and Birmingham; and we are just about to open offices at Fargo, Denver, and Spokane. That, roughly, is the group of markets. We are extending the service into the South and into the Southwest, which up to now we have neglected, not because we did not wish to work there but because we thought these other sections were more important.

The CHAIRMAN. You have office forces stationed in these towns and cities?

Mr. BRAND. Yes: we have a regular force of qualified technical persons in each of these offices, usually a qualified expert on fruits and vegetables who knows the market thoroughly. They are all civil-service men whom we have secured by examination, and I may

say that we have been fortunate on the whole in securing a very good class of men. They are able to do the business and to command the confidence of the trade.

Mr. ANDERSON. We are all interested in prices just now, and, so far as I can see, prices are continually going up, on fruits and vegetables, as well as everything else. Have you any information on that proposition, as to whether the work you do has had any effect at all on the price of perishables?

Mr. BRAND. In this respect it has certainly had a very profound effect. It has certainly brought about a more uniform distribution. Therefore, it has unquestionably tended to level prices the country over and to do away with very acute shortages and very high prices in one city when there was a glut in another city and correspondingly low prices. The effect on prices, of course, in our work is incidental. We do report prices, however, in our telegraphic reporting service, all of the jobbing prices, and in a number of cities we are now interpreting those that the consumer should pay, or rather what the retail price should be. We have had to undergo some criticism for doing that, but we have felt in this crisis that we should do it. In some cases we do that independently and in others in cooperation with the food administration.

Mr. YOUNG of North Dakota. It is largely a conservation proposition?

Mr. BRAND. That is what it amounts to fundamentally.

The CHAIRMAN. You deal only with associations in this work or with the individual?

Mr. BRAND. We deal with associations, individual distributors, carlot receivers, and others who are handling very large quantities of material.

The CHAIRMAN. It is your intention, however, to build up the associations, so that you may deal with them rather than with the individual?

Mr. BRAND. That is what we try to do, and we try to develop all branches of our service to assist the organization. We will try to make the service a specific help to the association rather than the individual, in order to strengthen them and in order to encourage them, but we have felt that the service must be available to all.

Mr. WASON. Does the public get any of this information?

Mr. BRAND. Yes; it does. During the past year we distributed over 3,000,000 of those bulletins and over 52,000 individuals and organizations received them. I do not want to impose on this committee; I know how busy it is, but I have here a set of reports merely as an indication of the type of information which is released. This is the daily information on carlot shipments and jobbing prices of fruits and vegetables. It shows the carlots moving from all the territories, the prices unloaded in all the great markets. Anywhere from 100 to several thousand persons receive those every morning from all the field and permanent offices in time to do business by them.

Mr. WASON. But my inquiry was particularly this: How does the house buyer get any information about it as he goes to his groceryman?

Mr. BRAND. This particular thing that we are now discussing, in the form in which the shipper and the receiver use it, is not of very

great use to the housewife, but we have, as I have stated, attempted to interpret that in terms of what the retail price should be, and in a great many cities it is published in the newspapers daily. We have a standing arrangement with the newspapers wherever they will agree to publish it.

Mr. WASON. That is my point. I have never seen it in the newspapers.

Mr. BRAND. It is published in some of the cities. It is a difficult thing to get them to publish it. But war prices have enabled us to do as much as we have. I think there are 37 of the papers that now use the prices with reference to live stock and meat. The circulation is very close to 3,000,000, but of course that does not mean much unless you happen to be in the territory where it is done. There are 45 trade papers, with a circulation in excess of 1,800,000, that publish this information.

Mr. ANDERSON. There are many of the States that have councils of national defense, with local county and State organizations that are publishing what they term fair prices?

Mr. BRAND. Yes.

Mr. ANDERSON. Do they get any assistance from your people on that?

Mr. BRAND. Yes, sir; they do. In every case where that is being done, and we have representatives, they are assisting. We are working together on it. There are plenty of problems on now because we have suddenly injected a lot of ginger into the food and distribution business. They would like us to engage in a lot of enterprises that would be very questionable for us to engage in, but we have tried to strike a median line and we have always been able to follow it. At the present moment we are having a rather warm discussion with one of the southern newspapers that wants to take our information and print it just as it pleases. We prefer not to have it published unless it can be published in such a manner as to convey all the facts, rather than misapprehension.

The CHAIRMAN. Any further questions on that item, gentlemen? If not, take up your next one.

Mr. McLAUGHLIN. What is the cost of preparing that daily statement? Is it quite large?

Mr. BRAND. I am unable to say what the per day cost is. I am even unable to approximate it. However, in the month of June, for which I gave you figures, we were handling fully as much information as this, because at that time a number of crops were moving which are not now moving, and the cost at that time was \$3,300 a month. It is more than that now, because we are reaching a great many more people and more markets.

Mr. McLAUGHLIN. That \$3,300 was for telegraphic reports?

Mr. BRAND. Yes; that was the cost of the telegraphic reports. These are copies of the collated telegraphic reports. We get up a complete copy at Washington. It is the only place where a complete copy is prepared. Each of the other markets handles its own information.

Mr. McLAUGHLIN. Out of which item is the expense of that paid?

Mr. BRAND. The item under discussion, 61, collecting and distributing market information.

The CHAIRMAN. Item 62, to enable the Secretary of Agriculture to gather from stockmen, live-stock associations, State live stock, etc., certain information. You have an increase of \$23,200.

Mr. BRAND. Yes, sir. This is a practical work which is the outcome of our live-stock investigational work, which we discussed earlier. Under this item we are publishing daily telegraphic reports on meat trade conditions in the great eastern city markets; daily reports on wholesale prices on western dressed beef, lamb, and mutton; daily reports on live-stock loadings in the United States west of the Alleghenies; weekly summaries of meat trade conditions in the eastern United States; monthly reports of frozen and cured meats in storage in the United States; and monthly reports of the shipments of stockers and feeders; and also monthly reports of the receipts of live stock in all the great centralized stockyards, 60 in number. There are others to which we ought to extend the work, to which we desire to extend it, but these 60 are the ones on which we desire to work at present. I may say that the American National Live Stock Association, the National Committee on the Live Stock Industry, and hundreds, if not thousands, of persons engaged in the producing and shipping and killing of live stock have asked for this service and for its extension. I brought along just a few of the reports that we have received. I think it would perhaps be worth while to read a single one to indicate what the general feeling is on this matter. Here is one from a point in Indiana, Anderson:

INDIANA SILO CO.,
Anderson, Ind., November 3, 1917.

Mr. CHARLES J. BRAND,
Bureau of Markets, Washington, D. C.

DEAR SIR: I am pleased to receive this morning from one of your branches information regarding markets on beef and meat. The writer had the pleasure of attending the Academy of Political and Social Science at Philadelphia some weeks ago and heard your very interesting talk, and although I have been pretty close to the live-stock business for a good many years I did not realize how efficiently the Bureau of Markets is being carried on.

I am inclosing a card for your files, on which I state that I breed, raise, and finish baby beef, not in a big way, but carry something like 100 head in an intensive way on my Indiana farm. I might say that our silo company is the largest manufacturer of silos in this country, and are therefore interested in the production of beef and dairy products through our many customers over the country.

I would very much appreciate being put on the mailing list for anything regarding the production and price of beef and milk products, also the market on hogs. Am more particularly interested in the movement and prices of live animals than the finished meat products.

Thanking you in advance for this daily bulletin service and again expressing to you my pleasure on having heard your lecture in Philadelphia, I am

Very truly, yours,

E. M. WILSON.

That is just an indication from a producer. We have hundreds of them from the other end of the line. I am trying rather to build up the interest of the producer, because we do not have any trouble about the market's interest. They are taking everything with avidity. We have to study the problem of the producer much more intimately in order to be of specific assistance to him.

Here is a case of one of the commission companies at Fort Worth:

CAMPBELL & ROSSON LIVE STOCK COMMISSION Co.,
Fort Worth, Tex., September 4, 1917.

Mr. CHARLES J. BRAND,
Chief Bureau Markets, Department of Agriculture,
Washington, D. C.

MY DEAR SIR: Through the courtesy of your Mr. Ellis, stationed here, we are receiving the reports giving the number of cars received each morning in the different markets, which I consider of great importance, and especially to those interested in the larger markets, where they have an interest and are keeping up with general conditions or the movement of live stock.

It shall be my pleasure to do anything I can to further the interest of your department in making this a success from the standpoint of the producer and shipper, and I feel that more interest will be taken as the people realize the benefits that may be produced through these reports. The market report that is coming out on dressed beef from your department is gradually attracting more attention and is being appreciated by those who are keeping up with market conditions.

With kindest regards, we are
Yours, sincerely,

CAMPBELL & ROSSON LIVE STOCK COMMISSION Co.
JOHN K. ROSSON,
President and General Manager.

I quote that just as an indication of the feeling that the people have toward this information. We have tried to devise it not from the standpoint of what we believe it should be primarily, but from the standpoint of what will give the service that will be a benefit to them.

Mr. McLAUGHLIN. You receive some, I suppose, containing complaints and unfavorable criticisms?

Mr. BRAND. We certainly do. Especially if some one has misinterpreted the information and makes a shipment which he believes was indicated by our information and fails to get good returns, he comes right straight back at us. I may say, however, that it is generally found to be due to a misinterpretation of the information, rather than to the inaccuracy of the information. I have some letters in which they state that they have found, where any dispute arose, that we were right at the time. The freight bureaus are also very much interested in this work. It is a protection to them. They have great volumes of complaints, some meritorious and some not, and it is an assistance to them in adjudicating their claims. I think it is quite a fair statement to say that 50 per cent of the claim bureaus of the railroads have asked to have this information every day, as an assistance to a fair adjudication of the disputes which they have with shippers. I think that is one of the very useful functions that the information is performing.

The CHAIRMAN. Any further questions on this item, gentlemen? If not, take up your next item, number 63, on page 184, to make investigation relating to the production, transportation, storage, preparation, marketing, manufacture, and distribution of agricultural food products, etc.

Mr. BRAND. This is the item which provides for the work which is carried on in cooperation with the Federal Trade Commission. It has for its chief object the determination of uneconomic factors in these industries. The present work is devoted practically wholly to the live-stock and grain industries. We are trying to locate monopolies, restraints of trade, division of territories, and uneconomic prac-

tices of all kinds. We are studying speculation particularly, which has been so much criticised. All that type of activity which is rather distinctly remedial in character and which, so far as our cooperating body, the Trade Commission, is concerned, is likely to be somewhat punitive at times, we are trying to confine under this particular item.

At the present time we have groups working in the Kansas City, the Minneapolis, and the Chicago grain markets, studying, for instance, the leased private-wire service, whereby you can, if you are a school-teacher or bank clerk, buy a grain contract or a cotton contract almost as conveniently as if you lived under the shadow of the board of trade. We are studying the grain bulletins, which have been suspected of being a method of price fixing. We have undertaken to study the operation of the produce end of the Chicago Board of Trade, and are engaged upon that at the present time. Then, too, other groups are working in the packing houses and in the producing sections. We are going back in the records of the big shippers and producers for a period of five years, in order that the information which we get may reflect average conditions rather than the conditions at the particular moment.

Mr. ANDERSON. Are we to understand that there is a speculative grain market now on which you can base these investigations?

Mr. BRAND. There is in the coarse grains, to an extent. It varies over the country. There is some speculation. However, this matter relates more particularly to the actual records of their previous transactions. It is a matter of going into their books and determining what they have done by the records, rather than—as we have been compelled to do so much in the past—by taking their word for it. I must say that they have been very fair about it, and, on the whole, they do not decline to disclose their records. In fact, we have had no cases of recalcitrancy.

The CHAIRMAN. That is rather an economic study?

Mr. BRAND. It is essentially that, and members of the committee and others as well who are familiar with the report on the cotton exchanges made several years ago will realize the possibilities of this particular line of work with reference to the grain markets.

Mr. WASON. Is there any speculation in the cotton market now?

Mr. BRAND. We believe there is. We have a particular way of telling. When we have a large volume of disputes under the cotton-futures act we believe there is some speculation going on. It is not great in volume. The price is too high. But there has been previously, and there was in the autumn, a considerable squeeze in the New Orleans market in which in one month nearly 40,000 bales of cotton were delivered on contracts, which is an extraordinary situation.

Mr. LEE. Have you any disputes to settle between the country people on grain?

Mr. BRAND. We have, under the grain-standards act.

Mr. HEFLIN. What is the margin required now?

Mr. BRAND. We urged very strongly that a minimum of \$10 a bale be required. I think that was adopted. We also urged that they place a maximum of fluctuation that should be permitted during the day. We urged very strongly a maximum of 3 cents in any one trading day. Both New York and New Orleans have adopted a

uniform rule and in most respects adopted the suggestion that we make, in order to do away with the evils of violent and excessive situations such as took place last February.

Mr. HEFLIN. You mean that the cotton exchanges now have adopted a rule requiring a margin of \$10 on a bale?

Mr. BRAND. Yes.

Mr. HEFLIN. For future purposes and sales?

Mr. BRAND. Yes; and they have done other things even more drastic than that. New York has established its clearing house now and New Orleans has a committee working upon it. They are actually viséing the character of accounts being carried by the firms, and if any firm is unduly long they are warned that they had better close out some of their outstanding contracts. They have given every indication of an earnest desire to do what we asked in this emergency.

The CHAIRMAN. Number 64 seems to be a new item, to enable the Secretary of Agriculture to investigate and certify to shippers and other interested parties the quality and condition of fruits, vegetables, and other food products when received at such important central markets as the Secretary of Agriculture may, from time to time, designate, etc. The estimate there is \$113,000.

Mr. BRAND. This is the outgrowth of the amendment to the food-production act, under which the food products inspection service at the markets has been established. There has been a demand for many, many years for disinterested determination of quality of food, especially perishable food products, when shipped from a distance to the central markets. Under the conditions which have prevailed in the past, a distant shipper, no matter whether he was a poultry shipper from Minnesota or an apple shipper from the Northwest, has had to depend upon some one in a distant market whom he did not know, and who might not be disinterested, as to any finding as to the quality of his shipment, if there was a question. And I am sorry to say the usual method in many markets and with a good many firms has been to reject if the market was against them and to accept if it was favorable. The result has been a discouragement of production and a great deal of unfairness to producers, to those who shipped their own product and did not have the market machinery to keep a check upon their representatives in the market.

Under this item, if it is granted, we propose to make permanent the work which is inaugurated under the food-production act. It has perhaps been commended the most highly of any single thing along marketing lines that we have undertaken. Just last night this letter came to my hands, and it is so apropos that I am going to read it to you.

T. C. BOTTOM PRODUCE Co.,
Kansas City, Mo., January 4, 1918.

Mr. CHAS. J. BRAND,
Chief Bureau of Markets,
United States Department of Agriculture,
Washington, D. C.

DEAR SIR: We always like to give credit where credit is due, and in this connection we wish to congratulate you upon the splendid service being rendered here under the food-products inspection law.

The men that you have in charge of this office here are practical produce men, and are very thorough and careful in their inspections, and very correct in their judgments.

We have had occasion to use the service a number of times and it was of great benefit to us, as by this means we were able to convince the shipper that the goods were really bad, and we doubt if we could ever have convinced them on our statement of the facts. We feel that this service will work a great benefit not only to the shippers of fruits and vegetables but to the legitimate and honest receivers as well, and we hope that the service will be continued, and also hope that the law will be so amended that it will give this department greater powers and a wider scope of service than the law permits at present.

We feel a receiver of fruits and vegetables should have the same right under the law to demand an inspection as the shipper has. In all fairness, this should be done, and we assure you that we shall use such influence as we may have toward bringing this about, and we hope that you will look at the matter in the proper spirit and recommend such changes as may be beneficial to both shippers and receivers, and when this is done the public in general will be benefited.

This service in connection with your market reports, and the powers of the food administration, in our opinion, is going to work wonders in our line of business.

Your, very truly,

T. C. BOTTOM PRODUCE Co.,
T. C. BOTTOM, *President*.

This came last night; I do not know these people at all.

Mr. HEFLIN. Heretofore when the producer shipped a carload of tomatoes or peaches, we will say, to Chicago or some other market, the man receiving that carload of produce could report back to him that the produce arrived in bad condition; the producer had no way of finding out whether that was true or not, and the receiver very frequently cut down the price and paid the shipper only what he wanted to?

Mr. BRAND. Exactly so.

Mr. HEFLIN. And this relieves that situation?

Mr. BRAND. This goes far in that direction. Just as an illustration, since you speak of Chicago and peaches—the producers' association in Arkansas shipped 54 cars year before last to a single commission merchant in Chicago, who never made returns of three of the cars at all, and on every car that we were able to trace he made a dishonest return. One car he settled for on the Chicago basis, but it was found that it had been shipped to Michigan, and, whereas he sent back word that he got only 35 cents a bushel, he really got \$1.20. The way it was discovered was that the receiver in Michigan said it was the finest lot she had ever seen, and wrote to Arkansas to ask them if they had any more of that kind so that she might get a direct shipment.

Mr. HEFLIN. How is the Government going to get the information to pass on this?

Mr. BRAND. We have prepared rules and regulations which set forth very carefully what steps are to be taken.

Mr. OVERMYER. Is that shipper still at large?

Mr. BRAND. We have no legal power to do anything to him, but we had him thrown out of the three great national trade organizations. He is still at large, but he is very much discredited. If he were to practice such dishonesty under the food-control act he would no doubt lose his license.

Mr. HEFLIN. How does the Government expect to be called into service between the seller and the buyer?

Mr. BRAND. We have distributed the rules and regulations to all the interested persons we could reach, 12,000 or 15,000 in number. We

also have a service and regulatory announcement which gives the exact form of application to be used. The application may be made by telegraph or telephone, but if done by telephone it must be confirmed in writing. We aim to keep it strictly businesslike.

Mr. HEFLIN. Suppose I should ship a carload of potatoes to the dealer in Chicago and request him to wire me upon the arrival of the car, and he should wire, "Potatoes arrived in bad condition"; what can I do?

Mr. BRAND. You can wire to the bureau here in Washington, asking them to inspect the potatoes, stating the car number, its contents, and the consignee; or you can wire direct to the supervising inspector at Chicago, and he will proceed forthwith to inspect the car.

The CHAIRMAN. Does he wait until you request him to inspect a car, or does he inspect it when he comes in?

Mr. BRAND. He inspects it, generally speaking, only at the request of the shipper. We have, however, specifically reserved the right to inspect cars upon our own motion, because the law seems to contemplate that. There seems to be an attempt to improve and educate, as well as to assist, and therefore we may enter a car and inspect it irrespective of any request.

Mr. LEE. However, they may receive that car and make returns and the shipper will not know it is in bad order or is reported to be in bad order until he gets his check. Ought not there to be some sort of a check if the car is received in bad order—a provision that they must report it to your department?

Mr. BRAND. There is a great deal of improvement and refinement that can be made in this matter. At the present time we have just this general power, as you understand, and we are trying to work out a proper and logical development of that power. The railroads have told us that if they had the power they would like to ask for an inspection of every car shipped over their lines or delivered by them at a terminal.

Mr. LEE. If a commission man receives a car in bad order, would it not be a good idea to have him report it?

Mr. BRAND. Yes; and generally his agent does report it. That is the first thing he does.

Mr. LEE. To the department?

Mr. BRAND. No, back to the shipper; and the shipper makes a request upon us for investigation.

Mr. LEE. Is there any law requiring him to do that?

Mr. BRAND. No; that is a matter of general trade practice—the usual custom in the trade. They do not always do it by any means, but it is usually done.

The CHAIRMAN. This item differs from the item in the food-production act only in the fact that it extends your service to other interested parties?

Mr. BRAND. And also gives us power to exact a charge, Mr. Chairman.

The CHAIRMAN. Yes; it gives you power to exact a charge.

Mr. BRAND. We believe that this is rendering a very specific and valuable service, and we believe that people who are perfectly willing to pay for it should be called upon to pay for it, not excessively, but reasonably.

Mr. HEFLIN. In that connection, don't you believe it would be a good idea to teach the shipper and the producer to have an understanding with the dealer to wire him immediately upon arrival the condition of the commodity shipped, so that he can immediately wire and have an inspection made to cure the evils suggested by Mr. Lee's question?

Mr. BRAND. Yes; and we have provided that they may designate agents to file with our inspector their power to act as agents.

The CHAIRMAN. About what fee do you charge?

Mr. BRAND. Under existing conditions we are not permitted to charge any fee.

The CHAIRMAN. That is true, but what will it be?

Mr. BRAND. It will vary with the different containers and the different products. I am unable to say what it will be. I should say from 50 cents to \$1 a car, but I would not like to be bound by any estimate at this time.

Mr. YOUNG of North Dakota. That is a moderate charge for the services you render.

Mr. McLAUGHLIN. At how many places have you inspectors located?

Mr. BRAND. At the present moment we have inspectors in the 15 large markets—New York, Boston, Philadelphia, Baltimore, Chicago, Minneapolis, St. Paul, St. Louis, Kansas City, Fort Worth and Dallas together, Houston and Galveston together, Washington, and Pittsburgh. We have men in training to open offices at Atlanta, Jacksonville, Indianapolis, Cleveland, New Orleans, Cincinnati, Buffalo, Denver, Detroit, Omaha, and San Francisco.

The CHAIRMAN. What amount do you intend to expend during the present fiscal year in this work?

Mr. BRAND. The assignment of the Secretary of Agriculture for this past year, as I recall it, was \$104,000. It is very near that.

Mr. McLAUGHLIN. \$101,700.

Mr. YOUNG of North Dakota. Don't you think, Mr. Brand, that eventually this service ought to be self-sustaining?

Mr. BRAND. That is what we think.

Mr. YOUNG of North Dakota. And that the fees probably will be made sufficient to cover the cost?

Mr. BRAND. Yes, sir.

Mr. ANDERSON. Your purpose in taking this item out of the food-survey bill and putting it in the estimates for the regular appropriation is to make it a permanent thing?

Mr. BRAND. Yes, sir.

Mr. McLAUGHLIN. If every man that shipped a bundle anywhere wished to have it inspected at one end the demand will come for inspection at the other end. There might be no limit to that sort of thing; you could cover this country with that kind of work and that kind of men. It is a serious question whether the Government wants to go into that kind of business extensively. I can see the helpfulness of it, but there are some things that the Government is not expected to do and that the Government can not do reasonably. If we could establish it on a reasonable basis and at a reasonable expense, or make it self-sustaining, or surround it with proper safeguards, it may be all right, but we are entering upon a great big field.

The CHAIRMAN. I think it is a field, though, into which the Government has got to go.

Mr. McLAUGHLIN. Are the States doing anything with it?

Mr. BRAND. No; except in a very modest way in a few cases.

Mr. McLAUGHLIN. Is there any suggestion of them taking it up?

Mr. BRAND. We have stimulated an interest in it by leading the way and we are cooperating with the State bureaus of markets. A number of the States have now, by legislation, established State bureaus of markets, and they are required by the State laws to cooperate with the Federal Bureau of Markets. We work with them.

Mr. McLAUGHLIN. Do the laws passed by these States provide for the appointment of inspectors to do the kind of work you want to do?

Mr. BRAND. In some States they do. Generally they do not. The State laws usually provide for inspection at shipping point, as in Washington and Michigan, or inspection of products in the markets offered for sale to the consumers.

Mr. McLAUGHLIN. What States have passed laws regarding marketing?

Mr. BRAND. New York, New Jersey, Pennsylvania, Virginia, Georgia, Florida, Ohio, Michigan, South Dakota, Oklahoma, Texas, Idaho, California, and Washington. In some States the powers are very general, as in New York, Idaho, and California. In others they are more specific, as in Oklahoma, Texas, and Georgia. In others they are specific in certain things but general in others and you enabled to do this kind of work, as in the State of Michigan, as you know, with Mr McBride in charge, and in Washington, Ohio, and Pennsylvania. The State of Washington has adopted our suggestions quite fully. We have drafted a law suitable for enactment in the States covering this matter and they have all legislated according to the local situation. If they can get through a thoroughgoing law, they put that through. If they can cover only the general powers, they have done that.

Mr. McLAUGHLIN. There is no question about the help it would be to shippers and receivers, but it is an immense work, involving very large expense and the employment of a very large number of men. It seems to me that something should be done to make it self-supporting. You ought to have a right to charge a fee.

The CHAIRMAN. They propose that right in this language.

Mr. McLAUGHLIN. I know, but the chairman suggests that that be eliminated, so as to make this——

The CHAIRMAN (interposing). No, I did not suggest that; I simply suggest that we have something in reserve that we can offer if a point of order is made. I am preparing a second line of reserves to fall back upon.

Mr. BRAND. Here is a telegram that indicates the type of the problems in the country. This is from the Yakima County Horticultural Union of Washington:

[Telegram received Oct. 2, 1917.]

Peter Michaels Co., Kansas City, has refused car 96368 Elberta peaches. Have every reason believe rejection unjustified. Have you man there can inspect for us. We northwest shippers need Government protection from this rejection curse.

YAKIMA COUNTY HORTICULTURAL UNION

That it just an indication of how helpless the distant shipper feels when his product gets to a far-away market.

The CHAIRMAN. I doubt if there is any branch of agriculture in which there is more robbery than in this.

Mr. McLAUGHLIN. There is no doubt about the helpfulness of it. No one disputes that. It is just a question of whether or not the Government can go into it and, if so, to what extent and how. There are a thousand and one things that the Government can do to help every producer. It might furnish fertilizer. A rain-making proposition is feasible under some circumstances. There is no limit to which the Government can go. The question is, how far should it go?

The CHAIRMAN. This item was originated in the Senate and put on this food-production act in the Senate by Senator Bryan, of Florida. It does not emanate from the department, although I think it is a splendid idea and that it ought to be worked out in greater detail, probably in a permanent bill.

Mr. McLAUGHLIN. Mr. Brand has mentioned a number of places where men have been stationed, but the note says that \$101,700 was allotted for that kind of work. It is not possible that you would use anything like that sum of money in that small number of places?

Mr. BRAND. No; the year is only half spent, and the total expenditures to date are about \$20,000; but we now have 15 offices in operation and are rapidly getting ready to open 11 more.

Mr. HARRISON. The food-production act was not passed until August 10.

Mr. BRAND. And it is hard to get the kind of men required for this work, I wish to assure you, so much so that now we have undertaken to train 11 men ourselves preparatory to assigning them at the additional markets.

Mr. JACOWAY. I think this is one of the wise provisions of this bill, and I want to state to the committee that in a district in my State, known as the Bellefont district, there was one gentleman who was designated as the chief of a great many shippers. He received many inviting circulars from a house, and they consigned their fruit and other products to the house. They wrote back and stated that the shipment had deteriorated, was not up to grade, and alleged various and sundry things why they could not give the price contained in their circulars. The man who was agent for these shippers went to Chicago and tried to get an adjudication and, failing, he came on to Washington and conferred with me. Congressman Tillman took it up with the Department of Justice, with the result that he made these people refund to him something between \$3,000 and \$4,000.

Mr. BRAND. Yes; we helped.

Mr. JACOWAY. I know you did. Now, he has made a statement of those transactions in detail and, as I now recall, swore to them, a copy of which is in my office. I think it would make interesting reading for this committee and for those who are interested in the subject. It is an evidence of the appealing necessity of the very law we are now discussing, and I am going to ask unanimous consent that his statement be put into the record.

The CHAIRMAN. Without objection, that statement will be inserted.

(The statement referred to follows:)

Mr. Chairman, my name is J. F. Hawkins, of Bellefont, Ark.; occupation, farmer. My object in coming before this board is to make known to you certain existing conditions of national importance at this time and to make certain specific charges as to the cause thereof.

The great army of small producers of this country are languishing for want of protection by laws insuring them a square deal in the great market centers. The consumer is paying the price of the high cost of living, but the small producer is not reaping the benefit. There is a lack of confidence on the part of the producer in the wholesale distribution of fruit and produce which has resulted in the falling off of production in these lines of endeavor because it is not profitable to continue therein. The practice of unfair dealing on the part of the few dealers has caused loss of confidence in all. The large trade organizations, such as the Western Fruit Jobbers' Association and the National League of Commission Merchants of the United States, are in a way largely responsible for this condition, and to that extent it might be called combinations in restraint of trade. It has been my experience that these organizations give aid and protection to unfair dealers by refusing to give to the shipper or his agent information that will enable him to get a square deal on commission-shipped goods. As an example of this particular charge, I submit the following statements of fact and evidences thereof:

In August, 1915, we, the Farmers' Shipping Co., of Bellefont, Ark. (of which I am a member), shipped to George N. Ford, a commission man in Chicago, who is a member of the Western Fruit Jobbers' Association and the National League of Commission Merchants of the United States, 15 cars of peaches, relying on letters from him and filed herewith, marked "Exhibit 1" and "Exhibit 2." After receiving an unsatisfactory accounting for the 15 cars of peaches, early in September I wrote a letter of protest and received in answer to same letter filed herewith and marked "Exhibit 3." Not being satisfied with this explanation, I made a personal investigation of all these shipments, and I herewith submit the sales and other documents showing the transaction in full on three cars:

Car. No. 947, F. R. L., marked "Exhibit 4."

Car. No. 1919, F. R. L., marked "Exhibit 5."

Car. No. 1767, F. R. L., marked "Exhibit 6."

Other cars in these shipments showed the same unfair method. I later made an investigation for other parties shipping to the same man and found the same conditions throughout. To sum it up, I investigated 46 cars shipped to him. I found 52 separate and distinct frauds committed on same, 30 in the form of a cartage charge, where it was not paid by him, and a few items of refund on freight collected by him from the railroad and not reported to the shipper. Twenty-two cars showed they sold for more money than he reported them sold for. Total collections from him on these shipments, \$1,485, as shown by copies of releases held by me. As a further evidence of unfair methods of this most unfair dealer, I herewith submit a copy of an affidavit of Ford's account sales clerk, showing all the details of this fraud. Affidavit marked "Exhibit 7."

During this investigation I got no assistance from any member of the Western Fruit Jobbers' Association or the National League of Commission Merchants, and some of them flatly refused to tell me the price they paid for these goods. I got the information, in spite of their refusal, in one case, and as a concrete example of how this shipper loses I hand you the sale on car No. 7358, S. F. B., marked "Exhibit 8."

After a careful study of statements and exhibits filed herewith, it will be evident that we were defrauded in the original sale, and that a second fraud was committed in subsequent settlements, and that there is more money yet due the shippers of these goods.

As an illustration of other methods of unfair dealing, I submit a collection of papers representing 29 cars of peaches shipped to the Voelker Product Co., of St. Louis, Mo., in July and August, 1915, by the Hardy Fruit Growers' Association, Hardy, Ark. These papers, taken as a whole, show a studied attempt on the part of the commission company to deceive the shipper and keep them blind as to the real facts attending the shipments and disposal of same.

The sales on this business were all made up to show St. Louis sale and delivery, whereas no such thing occurred. The goods were all reconsigned by the Voelker Product Co. to other commission merchants and by them sold on

a commission basis, and all charges made thereon paid by them, and the net return made to the St. Louis company. They then made up and sent the shipper a St. Louis account sale, showing amount sold for, amount of freight paid, and commission, which sale is both false and fraudulent. It is false for the reason that it is not the correct price paid; it is not the correct amount of freight and commission paid. It is fraudulent for the reason that it conceals from the shipper the fact that he has paid another commission to the party who really did sell his stuff and thereby earned a commission, enabling the St. Louis company to collect another commission for which they rendered no service. I submit these papers marked "Exhibit 9."

I have in my possession papers covering 85 cars of peaches shipped by Pope County Produce Co., Russellville, Ark., July, 1915, to the same company and handled in the same way. I have papers covering 17 cars shipped by other parties and handled in the same way, making a total of 131 shipped to this company for which a selling charge was made and practically no valuable service rendered them, and depriving the grower of a sum of money approximated \$4,000. This practice is widespread and growing and is generally done by keeping the shippers blinded as to real facts.

A form of contract is sometimes used that carries a joker in it, which, if the shipper is kept hoodwinked, is never needed, but in case the shipper gets wise and makes a "kick" he is referred to this clause. Sample contract is herewith submitted marked "Exhibit 10."

There are some commission merchants now bold enough to uphold and openly advocate the practice of charging double commission, notwithstanding the fact that the highest court, without exception since 1851, has held that the practice of commission merchants reconsigning goods to other commission merchants and charging for both services is contrary to common reason and justice.

Three reputable commission merchants of St. Louis made the statement that this was a common practice in St. Louis and that it is now being done regularly.

Under this system of business it is possible to consign the shippers' goods clear out of existence. It's an endless chain and a dangerous one to the producer. I know of a case of this kind where the producer paid three commissions, two to the commission merchants and one to the home man. There are many other forms of unfair dealing by middlemen, but I cite these two, as I have absolute and positive proof to back these statements.

I am not sent here by anyone, and yet in a way I represent many, who may not be able to produce the truth along these lines, and I make these statements and present this proof, in the hope that justice may be assured the producer in the future and many be profited thereby.

In my opinion section 6 of House bill 4630 will, if enacted and enforced, remedy a good many evils now existing, and also stimulate the production of fruit and produce. When the small growers finds that he can get a square deal he will exert himself as he never has before.

In some fruit-growing sections of Arkansas the growers have been cheated out of their fruit year after year and many orchards have been abandoned, especially peach orchards, and unless some legislative protection is given them, peach growing will decline to a point of home consumption.

Mr. Chairman, I hope that I have been enabled to serve you and my people in some small way, and I thank you for this opportunity.

Respectfully submitted.

J. F. HAWKINS.

Hon. A. F. LEVER,

Chairman, Committee on Agriculture.

House of Representatives, Washington, D. C.

Mr. JACOWAY. I want to say that the only objection to that feature of the law is this, that if a cause of action does arise, does it arise where the shipment was consigned or does it arise at the initial point from whence shipped; and it occurs to me that, if it could be incorporated into the law that the action arises where the shipment originates, it would be well.

The CHAIRMAN. Anything further on that item, gentlemen? If not, take up the next, No. 65, for investigating, demonstrating, and promoting the use of standards for the different grades, qualities, and conditions of cotton, etc.

Mr. BRAND. There is no change in that item except such as is involved in transfers from the lump fund to the statutory roll to provide for the statutory positions, with a corresponding reduction in the lump-fund amount.

The CHAIRMAN. For what is the bulk of this money used now?

Mr. BRAND. Briefly about five things: First, for work in the new cotton territory of the Southwest; second, for work on Sea Island standards; third, for work on standards for length of staple; fourth, for cotton-testing work on the official cotton standards of the United States; and, fifth, the testing of cottons for the manufacture of airplane cloths in this emergency. We are carrying on all the tests for the Signal Service for airplane cloth, and incidentally we are passing on all of the cotton that is purchased for that purpose.

The CHAIRMAN. You have now established standards for all cotton. Will it be necessary to continue this appropriation indefinitely in order to maintain these standards?

Mr. BRAND. Yes; it will be necessary to do a great deal of maintenance work, but the standards which have been established thus far are only grade standards. Standards for condition, length of staple, and other qualities have not yet been established.

The CHAIRMAN. Any questions on that, gentlemen? That item is pretty well known. It is an old item. If there are no further questions, take up the next, No. 66, to enable the Secretary of Agriculture to make studies of cooperation among farmers in the United States in matters of rural credit and of other forms of cooperation in rural communities, etc., \$28,280. There is an apparent but not an actual decrease.

Mr. BRAND. This is the work on general cooperation for other than marketing purposes. Under this item all of the investigations of cooperation in rural credits and insurance and cooperation for recreational and educational purposes is carried on. During the past year we have carried on a study of the advancing system and of its effects upon agricultural conditions. We found, of course, a very close relationship between one-crop farming and the advancing system. We have found that 80 per cent of the farmers in a given territory in the one-crop section of the country are working under the advancing system. The work has included the encouragement and assistance of cooperative fire, windstorm, hail, and live-stock insurance companies. With the aid of the solicitor's office, which always helps us greatly, we have assisted in drafting a law suitable for enactment bearing on agricultural insurance, in which we have had the heartiest cooperation of all the insurance associations.

Mr. McLAUGHLIN. Is that a crop insurance?

Mr. BRAND. The law already drafted deals with fire insurance only.

Mr. McLAUGHLIN. Have you anything printed on that?

Mr. BRAND. We have now in process a draft of it. We have also printed, on the general subject, a number of papers on fire insurance.

Mr. McLAUGHLIN. Will you send those bulletins to me?

Mr. BRAND. I shall be very glad to do so.

Mr. YOUNG of North Dakota. I should like to have those, too; very much.

Mr. ANDERSON. What consideration has been given to the question of personal credit as distinguished from land credit?

Mr. BRAND. That has also been a subject of discussion, and we have drafted, and it will appear, I think, this week, a credit-union bill, suitable for enactment by States, to deal with the personal credits phases of the rural-credit problem.

Mr. ANDERSON. That is a State proposition?

Mr. BRAND. Yes. We have come to that conclusion and are dealing with it on that basis. That is our conclusion after a careful study of several years' duration, with incidental studies prior to that. We had the proof of the publication last week. There is a great demand for it and we believe it will be of assistance. Much of the work we do is work for other people. For instance, on the State marketing law we have received requests from a great many States, and it takes a great deal of work to draft a suitable piece of legislation. We have done the same with the cooperative law to comply with section 6 of the Clayton Act. We have done a great deal of that kind of work, and all these general types of cooperative organization are dealt with under this item.

Mr. McLAUGHLIN. Have we time for the witness to tell us briefly his ideas of crop insurance and what plan he has suggested, Mr. Chairman?

The CHAIRMAN. Certainly. I would like to say, gentlemen, that, while we are anxious, of course, to expedite the hearing, I want members to be perfectly free to get all the information they can or desire.

Mr. ANDERSON. Of course, much of the work of this bureau is comparatively new, and it is branching out into new things all the time.

The CHAIRMAN. This is really at this time probably the most interesting bureau we have, and I expected Mr. Brand probably to take up the whole day on this proposition, and I would like the members to feel perfectly free to get all the information they desire.

Mr. BRAND. In the matter of crop insurance, as in the matter of fire insurance, we are working toward the mutual organization, which works on a cost basis for losses and necessary expenses. The intimate details of that I would not be able to give you, but that is the general preliminary work we are doing.

Mr. McLAUGHLIN. Local associations?

Mr. BRAND. Local associations for fire insurance, and organizations covering a wider area for crop insurance. We have, as a matter of fact, made a very careful study of practically all those organizations now existing in the country. We aim to select the best features of each of them for the uniform plan we are trying to suggest.

Mr. McLAUGHLIN. How many of those associations are now in the country?

Mr. BRAND. I should say there are twenty or more State associations. I would not be surprised if there were as many as 3,000 of the local associations. I have had information as to the number, but I do not now recall it.

Mr. McLAUGHLIN. Is any State money now furnished, or is aid given in any county?

Mr. BRAND. The North Dakota State hail-insurance law has been in actual operation either four or five years. Montana and Nebraska recently passed State hail-insurance laws, but I do not think either of them was in operation last summer.

Mr. YOUNG of North Dakota. It has been authorized in North Dakota, but it was not put into operation on account of an unjunction. It is also in operation in the Province of Saskatchewan, Canada. Ordinarily a State proposition can be handled better than a smaller one, because sometimes the crop can be entirely wiped out in a county, while it may be good in the remaining portion of the State, and if it is on an assessment basis, probably the bigger the area that could be properly organized the more successful it would be.

Mr. BRAND. In South Dakota, and to an extent in Wisconsin and Minnesota, they do have this State wide or sectional idea. Sometimes it is confined within a certain religious denomination. For instance, all of the members of a religious denomination will apply to the particular mutual association that has been organized among its membership. It usually works on an assessment basis. If you are hailed out completely, it means that your more fortunate neighbor who was not hailed out contributes toward paying your loss.

Mr. ANDERSON. That is one branch of cooperative effort that has been uniformly successful.

Mr. BRAND. Crop insurance on the mutual plan has been quite successful in the Northwest, but it must be admitted that it has been less uniformly successful than fire insurance.

Mr. ANDERSON. There have never been many failures in crop insurance of any kind, so far as I know.

Mr. BRAND. We are also working on the matter of cooperation in the management of mutual rural telephone systems. We have gotten out considerable information on that and we are assisting in various sections with these organizations.

Mr. McLAUGHLIN. You have received suggestions, haven't you, that a Federal law be enacted along the line of crop insurance?

Mr. BRAND. Yes.

Mr. McLAUGHLIN. What do you think of that? Is there any way you believe it could be done by the Federal Government?

Mr. BRAND. I feel just as you expressed yourself a few moments ago, that there is almost no limit to the extent to which the Federal Government might go into things, and it seems to me that is one of the things where private initiative properly directed could accomplish very much more than it could in other respects. So I am inclined to doubt the necessity for the Nation to engage in that particular matter now. Undoubtedly it can be done, and it would be valuable and helpful, but it can be done very successfully, as has been the case in the Northwest particularly, by private enterprise.

The CHAIRMAN. Anything further, gentlemen, on that item? Take up the next item, number 67, to enable the Secretary of Agriculture to cooperate with the several States in the employment of agents to acquire and diffuse useful information connected with the distribution and marketing of farm products, etc. You have an increase there recommended of \$22,000.

Mr. BRAND. At the present time we are working with 21 States and we are on the eve of concluding negotiations with eight more. The additional sum would permit us to carry on the cooperation with the 22 States for a whole year and enable us to extend somewhat the activities of the men that we call field agents in marketing. At present the States contribute a larger total to this work than the depart-

ment does. If the chairman would like, I will insert in the record a list of the States with which we are cooperating.

The CHAIRMAN. We shall be very glad to have you do that, and also a statement of the cooperation they are giving in the way of money.

(The statement referred to follows:)

State cooperation in marketing work.

States cooperating.	Allotments.		
	Bureau of Markets.	State.	Total.
Alabama ¹	\$1,500	\$4,900	\$6,400
Arizona.....	1,000	1,000	2,000
Arkansas.....	2,250	4,530	6,780
Colorado.....	2,300	4,500	6,800
Connecticut.....	1,500	2,900	4,400
Georgia.....	1,500	2,250	3,750
Indiana ¹	600	600	1,200
Iowa.....	1,200	2,500	3,700
Kentucky.....	1,000	10,120	11,120
Louisiana.....	1,800	600	2,400
Massachusetts ¹	1,000	11,600	12,600
Michigan.....	1,000	1,700	2,700
Minnesota.....	1,200	1,000	2,200
Mississippi ¹	600	4,600	5,200
Montana.....	1,000	2,600	3,600
Nebraska.....	1,000	1,000	2,000
New Mexico ¹	1,500	1,500	3,000
North Carolina ¹	4,600	15,500	20,100
North Dakota.....	1,500	3,000	4,500
Ohio ¹	1,200	1,200	2,400
Oklahoma.....	1,000	11,000	12,000
Oregon.....	2,100	2,100	4,200
South Carolina.....	1,500	5,500	7,000
Tennessee.....	1,500	1,710	3,210
Texas ¹	300	950	1,250
Utah.....	1,200	2,200	3,400
Vermont.....	1,000	1,600	2,600
Virginia.....	2,000	6,666	8,666
Washington.....	1,000	8,500	9,500
Total.....	40,850	117,826	158,676

¹ Negotiations being concluded.

Mr. BRAND. You will be interested in that. I had this thrown together this morning, just to indicate what the situation is. In very few cases do we bear all the expense of work. The States are very glad to contribute their share of the cost. At the present time about \$40,850 of Federal money and \$17,826 of the States' money is being expended in this work. In other words, the States are contributing nearly three times as much as the department in the support of this work. The problems in the different States are very large and we find that there is the greatest help in having the joint representative of the department and the States working on these problems. The field agent in marketing furnishes a source of valuable information for us, and he also furnishes a channel for reaching the people of the State in a very intimate way. This is all done in the closest cooperation with the extension services both of the State and of the Federal Government, and also in cooperation with the bureaus of markets in those States which have established such agencies. We have taken a position, which the Secretary thought was wise, that where the States have passed laws establishing State bureaus of markets, we should cooperate with them as far as we possibly could in bringing about

and carrying on useful work. In a number of cases we also work jointly with the State commissioner of agriculture.

Mr. McLAUGHLIN. You remember that I was not in entire accord with you in this matter of demonstration, or at least the extent to which you were carrying it on or could conduct it along your ideas. It might reach down even to the matter of the kind of crops to be raised, the manner of raising them, and all that. If you carried your demonstration proposition to the end, it seemed to me that you would get out of the marketing proposition altogether and that it was not for your bureau to do that kind of work. What have you been doing along this demonstration line?

Mr. BRAND. We are limiting that work wholly, of course, Mr. McLaughlin, to marketing and distribution and organizational activities.

Mr. McLAUGHLIN. The demonstration part—what have you been doing in that? That word is in this paragraph.

Mr. BRAND. As a concrete illustration, the Pacific Northwest has depended in the past absolutely upon transportation facilities which, in less trying times, were generally sufficient. Since the outbreak of the European war the car shortage has become keener and keener, and they find themselves unable to move their crops, so that in some years extensive amounts have frozen in the orchards. We have gone in and demonstrated the types of packing houses to be built to suit their conditions.

Mr. McLAUGHLIN. You say you have done that? How?

Mr. BRAND. We have gotten the people together and persuaded them to put up the money to build a packing house in accordance with the plans we have submitted to them. Then we have recommended the types of grading equipment, etc., to put into these packing houses, the types of cost and accounting records, and how to handle the fruit. We have gone in and demonstrated how to deal with this matter. We gain experience in California and Colorado and all over the country, and we have been able to bring it down to these localities that have only their local experience, and get them to use it in the future to their advantage. We have done the same with many other things. For instance, in the case of sweet potatoes, we have not only established a tentative set of grades, but we have gone about and showed the growers how to pack their sweet potatoes. The department has also urged the building in the sweet-potato country of potato houses and we are showing them how to pack in order to get the best results. That work, of course, goes to groups rather than to individuals. We are able to assist a man who has 25 or 30 carloads of fruit, but, generally speaking, it is the associations and groups that are assisted.

Mr. ANDERSON. One of the things that has retarded the development of the county-agent proposition in the Mississippi valley in Minnesota has been the fact that most of our people feel that they pretty well understand the production end. They know that and feel that their problem is that of marketing. What is your connection in this work with the county agents?

Mr. BRAND. To be specific, we will take the case of Minnesota. We have an understanding, which is jointly between the States Relations Service of the department, the Bureau of Markets, and the State of Minnesota, as represented by the president of the University

through the extension director, Mr. Wilson, whereby we employ jointly a gentleman in the State of Minnesota who devotes his whole time to these marketing problems, giving assistance to county agents wherever it is required. We try to keep him in touch with all the sources of information, furnish him information that he can use, up to date and dependable, and work generally through that channel with all county agents that require assistance. We do more than that in Minnesota. It happens that they have an extension system of boys' clubs in Minnesota. There are some 1,200 clubs of farmers' boys, and we got up programs on marketing and rural-credit subjects that they can have in their weekly or monthly meetings covering problems in that section.

Mr. ANDERSON. The county agents generally are not experts in marketing problems?

Mr. BRAND. They are not, and for that reason we have taken the position that it is desirable to have some specialist to whom they can go with reference to marketing problems.

Mr. McLAUGHLIN. Do you employ such a man in Michigan?

Mr. BRAND. Yes, we do; Mr. Ellsworth. I say we employ him. We liked him well enough to move him to Washington. The work has grown so that we have found it necessary to have an assistant, and we brought Mr. Ellsworth to Washington from Michigan.

Mr. McLAUGHLIN. He is a local man?

Mr. BRAND. Yes. He is a Lansing man.

Mr. McLAUGHLIN. Oh, yes. I know him very well.

The CHAIRMAN. If there is nothing further on this item, gentlemen, we will stand in recess until 2 o'clock this afternoon and continue with Mr. Brand. We would like to finish with him this afternoon if we can.

(Thereupon, at 12.14 p. m., a recess was taken until 2 o'clock p. m.)

AFTER RECESS.

The committee reassembled at 2 o'clock p.m., pursuant to the taking of recess.

STATEMENT OF MR. CHARLES J. BRAND, CHIEF OF THE BUREAU OF MARKETS, UNITED STATES DEPARTMENT OF AGRICULTURE—Continued.

The CHAIRMAN. The committee will come to order. Dr. Brand, we had completed item 67, and you will take up item 68, page 188, of the Book of Estimates, "for investigating the handling, grading, and transportation of grain, including the grain sorghums, for the purpose of fixing definite grades thereof. \$92,750."

There is an apparent decrease, but that is accounted for by the transfer. Suppose you tell us what progress you have made in this work. Item 68 has to do with the investigational work on standards and a later item covers the enforcement of the grain-standards act.

Mr. BRAND. If you like, I will sketch the work we are doing under this item and answer questions regarding the matter of the grain-standards act.

The CHAIRMAN. All right.

Mr. BRAND. Under this item we carry on all of the investigational work which leads to the establishment and promulgation of standards, under the act, and from that point the matter is dealt with under the appropriations made for the enforcement of the act.

The corn standards, as you know, went into effect on the 1st of last December. They have now been in effect a little over a year. They have given practically universal satisfaction. During the portion of the fiscal year that we are reporting upon, namely, the fiscal year 1917, there were seven months under the corn standards, from December 1, 1916, to June 30, 1917, during which period 237,595 cars of corn were inspected in accordance with the standards. Unquestionably the result of the use of the standards has been to get uniform grading of corn throughout the United States. The trade makes such statements very generally, and they are borne out by the facts and comparisons.

The investigations upon which the wheat standards were based were also made under this item. These standards were put into effect on the 1st of July, with respect to winter wheat, and on the 1st of August, with respect to spring wheat. Investigational work is continued on both the corn and wheat standards. This is really a new field of endeavor—the establishment of more exact standards. We try to keep abreast of developments; we try to conduct our investigations in such a way that we can determine whether the grades established are working to the best interests of the country.

Under this item we are now about to announce tentative standards for oats. The investigations are practically completed and the rough draft of the standards is in my hands. We expect to put out the regular tentative draft as a basis for discussion with all of the interests of the country that are affected by these standards.

We make it a practice not to put any of these standards into effect without first having extended conferences with the trade, in order that it may have a full voice in the final enactment and in order that where mistakes occur in any of our standards they may be pointed out, so that the standards may be as good as possible.

The work on barley standards and rice standards is proceeding, and so also is the work on grain sorghums and on flaxseed. We have had a great deal of difficulty getting sufficient men to undertake all these lines of work. We have lost about 75 men to the military service, and, of course, in the next draft we will lose more. We have made it a practice for the last several months to select, as far as possible, men who are not of draft age, in order that, as the war progresses, we will not be so much disturbed when the subsequent drafts are called. The work relates not only to standards but also to better methods of handling and things of that sort.

Mr. RUBEY. Before you get away from grades; how have the wheat grades been received?

Mr. BRAND. Various. On the whole, however, quite well.

Mr. RUBEY. Not quite so well as the corn—not so universally?

Mr. BRAND. No; they have not been. They did not have the advantage of two years' preparatory work under conditions which resulted, of course, in an excellent educational effect.

Mr. RUBEY. What particular phase of the wheat grades has been objected to most?

Mr. BRAND. I should say, broadly and generally, two things—the moisture limitations in the Northwest and the application of the dockage system in the Southwest.

Mr. RUBEY. I have heard more complaint on account of dockage than anything else.

Mr. BRAND. That point will come up under the grain-standards act. It is peculiar that the section which has not suffered from having any excessive amount of dockage is the one that is complaining most severely about the dockage. In the Southwest about 50 per cent of the crop this year showed one-half of 1 per cent or less of dockage, or was practically free from dockage, whereas the Northwest, which had between 2 and 3 per cent, has made no complaint about it. On the other hand, the Southwest has more moisture in the grain than the Northwest.

Mr. RUBEY. Is not that due to the fact that the Northwest is more accustomed to dockage than the Southwest?

Mr. BRAND. Quite true. In the Northwest they have complained very bitterly about moisture, whereas their grain has been delivered relatively free from moisture.

Mr. ANDERSON. We have had corn standards up there, just the same as anybody has.

Mr. BRAND. But you do not have millions of bushels—

Mr. ANDERSON. We do not have the volume of corn.

Mr. BRAND. You do not have the outside shipments. Very little corn of the Northwestern States is moved out of the States; it is practically all consumed at home.

Under this item, also, we carry on the work relating to better methods of handling. In the Pacific Northwest we are working particularly on the problem of bulk handling. It costs a great deal to handle grain in sacks, as is done in the Northwest. With a warehouse capacity, both elevator and flat, of about 110,000,000 bushels, only about 11,000,000 bushels is of elevator capacity, and the rest of it is in flat houses, in which grain is handled in sacks. Now, sacks are so expensive and so hard to get that the trade of the Pacific Northwest is simply forced to consider going into the elevator handling of grain. We have been trying to help them in that direction, and, as a result, in part, of our efforts, the Port of Portland, Oreg., has put in a 3,000,000-bushel elevator within the past year. We are also working in the country districts advising as to economical types of elevators, elevator construction, and things of that sort. It seems necessary, as far as possible, to get on a bulk-handling instead of a bag-handling basis.

Mr. RUBEY. As your actual work of investigating for the grading of grain lessens, you extend your work along the lines of marketing, elevators, questions of handling, and things of that sort?

Mr. BRAND. Yes; we try, as far as we can, to take up the most immediate and important things first and get those cleared up. New problems are developing all the time.

Mr. RUBEY. Did you have any new problems in regard to the grading of grain—for instance, corn and wheat—that you have passed by?

Mr. BRAND. Yes; we have, decidedly. There has come into existence a demand for a change in the basis of grading, to put it on what we call the score-board basis, giving each factor its own inde-

pendent value. There is a growing demand for that sort of thing; so we are carrying on investigations to determine whether there are other and better ways of grading and standardizing grain; and we are doing the same with cotton, by the way.

Mr. RUBEN. My idea would be that when you get a grade established, and people get to know something about it, it ought to be let alone, if possible.

Mr. BRAND. It should be disturbed only when there is ample reason, and gradually, with ample educational effort, so that every one will understand the change. This year has been a very great educational year, of course, and it has borne hard sometimes, because people have not known and have not taken the pains to inform themselves, but we believe that a great deal of progress has been made in an educational direction. We are also working on the control of smut, in cooperation with the Bureau of Chemistry and the State authorities. We have persuaded the thrashing-machine companies to build demonstration machines in such a way that it has been able to remove 65 per cent of the smut from the grain at thrashing time, not only improving the grade but preventing the spread of the spores back on the soil and also doing away with explosions, which no doubt have been mentioned in connection with the presentation of the Bureau of Chemistry's estimates.

Mr. ANDERSON. Of course there has been no trade in grain in the sense in which we ordinarily use that term, since the Government undertook to purchase the grain, so that I take it there has not been any satisfactory experiments with the grades so far as the grain trade up there is concerned. That fact, I think, has resulted in a failure to bring out some of the difficulties which I think your standards present, which would have been brought out if the ordinary processes of marketing had proceeded.

Mr. BRAND. The industry itself has rather taken the position that had normal conditions prevailed there would have been practically no complaint as to the standards.

Mr. ANDERSON. Well, of course, so far as the elevator people are concerned, I take it that they can be persuaded to adopt almost any standard, so long as it is uniform and reasonably accurate and they can trade upon that standard, but I think the people who are shipping grain under normal conditions have had no opportunity to trade under the standards which would give them an idea of any shortcomings as the grades themselves might present.

Mr. BRAND. Of course, we have had abnormal conditions, but the best evidence that we have is from persons like Mr. Brandeis, of Louisville, Ky., for instance, one of the very prominent grain dealers of that territory, who was in my office recently. He stated very flatly that he believed, if normal conditions had prevailed, that so far as that territory was concerned we never would have had a single complaint about our standards. Mr. Kennedy, of Buffalo, the manager of the grain corporation there, made a similar statement and, in fact, in some respects a much stronger statement. Similarly, in Minneapolis, during the course of our hearing there it seemed to be rather the general opinion that had a competitive market existed the factors which have caused some dissatisfaction would have been taken care of in the competitive market.

Mr. ANDERSON. I think that is true to some extent, but what I had reference to more particularly was the difficulty on the part of the shippers in knowing for a certainty, when shipping a carload of grain, that they were shipping the particular grade that they were representing to the consignee they were shipping, and things of that sort.

Mr. BRAND. I think there is some truth in that.

Mr. ANDERSON. It is possibly true that the competitive conditions would have tended to minimize any unavoidable discriminations that there might be in the grades. Of course, the vast difference in price naturally accentuated whatever injustice or inaccuracy there may be in the grading. There is no question about that.

Mr. BRAND. Many country elevator men thus far, partly through carelessness, partly through disturbed conditions and other things, have not availed themselves of the opportunity to familiarize themselves with the grades. We believe firmly that the educational work which has proceeded in the past six months, and which will proceed in the next six, will remove a very large part of that lack of knowledge. We say that for the reason that the larger number of the elevator men who have provided themselves with those simple apparatuses that are necessary, and have used them, very generally have had no difficulty in getting their grades at the terminal markets.

Mr. ANDERSON. The elevator men, that is, the terminal elevator men who operate a line of elevators, claim that there is ordinarily, and with practical uniformity, a loss on grades, as they are taken out of the country elevator, and that there is a loss in grades between the time they are taken out of the country elevator and the time when they come to the terminal. Do you think that is true?

Mr. BRAND. The loss in grades is due to competition. They are competing for the business and all want to get the grain. Hence they overgrade. It is but a natural method of competition. They will give a man a little stronger on his grades in order to get his business and in order to give satisfaction. Under the uniform application of existing standards, where they must measure up to the grades finally, the opportunity for this particular kind of competition is removed.

Mr. ANDERSON. You think, then, it is generally true that there is a loss in grades from the primary market to the terminal market?

Mr. BRAND. The primary or country market overgrades, in comparison with the terminal market. It buys as of a higher grade, resulting in a reduction in grade when the inspection department finally puts its grades upon the grain.

Mr. ANDERSON. Do you think that has been true this year?

Mr. BRAND. I should say that there has been more consignment business this year than usual, which has resulted in the final grades being put on at the terminal market. I think that is generally true, because there have been constant complaints coming from the country elevators; they complained against the country mills; they say the country mills overgrade and buy their grain away from them.

Mr. ANDERSON. We have a little mill in our town, and I do not know of any wheat this year that has been bought upon any other basis than No. 1 price, less freight. Now, the elevator, of course, is in a somewhat different position, and in many instances the grade has been very much below No. 1. Much of it has been bought at 4 and 5, with the result that the farmer naturally does not understand

why the miller will pay him on the basis of No. 1, while the local elevator man will only pay on the basis of 4 or 5.

Mr. BRAND. If competitive conditions prevailed, of course the elevator man could go out in the country and get his share of the business, but under existing conditions the miller has the advantage, which, in some cases, they have used unfairly, but which the Food Administration has been trying to obviate by enforcement of its rules.

Mr. YOUNG of North Dakota. Is it not because there is practically no difference between the milling value of No. 1 and No. 4 that the mill in Mr. Anderson's town pays the No. 1 price for all of them?

Mr. BRAND. I would say no.

Mr. YOUNG of North Dakota. What would you say about it, Mr. Anderson?

Mr. ANDERSON. I do not know that I have sufficient experience and information to pass on that question, but my judgment, to some extent, is due to this proposition, and I think I am now going to call your attention to something that is wrong in your grades. Take No. 1 dark northern. If it contains 91 per cent of hard, vitreous kernels and contains 9 per cent of other wheat, it would go into the No. 4 or No. 5.

Mr. BRAND. Because of mixture?

Mr. ANDERSON. Yes. Now, if it contains 89 per cent of dark northern spring and 11 per cent of mixture, it would go into mixtures and be given grade No. 1. In other words, it would get the grade No. 1 mixture. Now, the difference in price as between dark northern spring No. 1 and No. 5 might be anywhere from 17 to 28 cents, which might be very considerable, while the difference between No. 1 mixture and No. 1 dark-northern mixture wheat would be only 1 or 2 cents. The result is that it works a very material injustice, and I think it accounts to some extent for the situation which we find between the mills and the owners.

Mr. BRAND. Now, on that specific matter, in point of fact, only a very, very small percentage of wheat is ever graded down because of mixture.

Mr. ANDERSON. I have had it suggested to me that the one reason for that is that the markets are not inspecting it on that basis; that where a car of grain would receive a higher grade as mixed wheat than it would receive as dark northern spring they are grading it as mixed grain and giving it the advantage of No. 1 grade.

Mr. BRAND. On that particular matter I asked the grain trade at Toledo and Buffalo, where they receive all classes of grain, specifically to address themselves to this question: Is it a worse discrimination against a car of grain to grade it down on account of these factors or is it a worse discrimination to throw it over into mixed? They said it was practically the same; that the penalties would be practically the same; that the market on one day might give a man pretty nearly the value of No. 1, because some miller might be in the market who was using that kind of mixture for his particular product. When the wheat standards were established we had a very long, serious discussion as to what we should do, and we decided it was fairer to the wheat to grade it down rather than to throw it over into mixture.

Mr. ANDERSON. I think that might be true as to wheat in general. I thought we would go into the other proposition. I think that would be true in common varieties of wheat, perhaps in some of the States' varieties, because under those varieties you jump from 2 per cent of other grains to 10 per cent of No. 2, while in our varieties the grades run 2, 4, and 6, so that we go clear down to Nos. 4 and 5, while in some of the varieties they might have a chance of getting 2 and 3.

Mr. BRAND. The percentages of other wheats permitted before a sample is called mixed wheat are the same in all classes except in the case of durum. The total wheat of other classes, for instance, in hard red winter, runs 2, 4, 6, and 10 per cent, as it does in hard red spring. In the Northwest we recognize the fact that durum wheats are likely to be mixed with spring wheat, and therefore we jump from 2 per cent in No. 1 to 10 per cent in No. 2, but that is distinctly lenient toward the Northwest, though it does tend to cheapen No. 2 durum unduly.

Mr. ANDERSON. The grain men I have talked to—and I have talked to a number of them—are almost universally of the opinion that the effect of grading down to No. 4 or 5 variety, as it relates to the price, is much more detrimental than the throwing of the grain over into mixed and giving it the grade for which the grain itself is intended.

Mr. BRAND. This question was submitted last year to the grain trade, and we found that it was the consensus of opinion—and we try to adopt the consensus of opinion about these matters, unless our data indicate otherwise—that we were discriminating less against the grain itself by grading it down than we were by throwing it into mixed. It happens this year, on account of war conditions, that everything must be ground. We are short of wheat, and everything has got to be ground, so we have a psychological situation which seems to indicate that we are making distinctions which do not mean anything, and, as a matter of fact, in normal times, under normal conditions, it was considered a very serious stigma to have grain thrown into mixed.

Mr. YOUNG of North Dakota. When you say you consulted the trade, I understand you to mean the grain trade and that it refers more particularly to those who observed the working out of the system at the terminals. Are the views of the small dealer away out in the rural districts included?

Mr. BRAND. He is included, absolutely.

Mr. YOUNG of North Dakota. How do you get his views?

Mr. BRAND. We get his views by letter, by his attendance upon hearings, by representations through the Government men, and in many other ways. Incidentally, all of these men are invited to the public hearings, and we try to hold the hearings at such points as to make it a minimum of expense for the country shipper to attend the hearings. Notice of hearings and invitations to be present are sent regularly to 23,000 elevators. I might say that we have gone out of our way in our endeavor to give producers and country elevator men an opportunity to be heard, to such an extent, as you know, Mr. Young, that, after our hearings had been announced in the last case, we added a hearing for Bismarck, wholly separate from any that had been announced, because we wanted them to be sure that we did wish

to have their point of view presented, and we were willing to have the hearing where they wanted it.

Mr. ANDERSON. Those men out in the country do not come into contact with the actual grading of the grain. All they know is the concrete result. They know, for instance, that wheat which graded No. 1 last year, or which would have graded No. 1 last year, only graded 4 or 5 this year, and they know they got relatively less for the grain on the basis of the price for No. 1 than they have gotten heretofore. That is all they know about it. I do not think many of them know why that is true, or could point out the specific working of the grading, or the specific part of the grade that affects them that way, if that is what does the business; and I think that is where the real difficulty comes in in attempting to arrive at the producer's viewpoint with respect to these grades. Now, I have had an immense amount of complaints. We do not have much wheat in my district, but I have had so many complaints that it has surprised me tremendously, all of them based upon concrete experiences.

Mr. BRAND. In this particular matter, the case that Mr. Anderson cites, there would appear to be discrimination. That has been largely cured because the grain corporation now pays up to within 3 cents of No. 1 for any grain which is No. 2 because of mixture, within 4 cents if it is No. 3, within 5 cents if No. 4, and so on down to within 6 cents of No. 1 if the wheat is No. 5. That has cured practically all that difficulty. To show you how little that really is effective, only 464 cars out of 24,908 received in Minneapolis during September, October, and November were graded down at all because of mixture of other wheats.

Mr. YOUNG of North Dakota. How is that going to be corrected next year if the United States Grain Corporation is in the market buying under those specific instructions to bid up?

Mr. BRAND. Upon competitive market returns?

Mr. YOUNG of North Dakota. Yes.

Mr. BRAND. The country elevator settles on the terminal market's grades, and the terminal market is compelled to pay the country elevator on the basis of the inspection at the central market.

Mr. ANDERSON. No; he does not do anything of the kind.

Mr. BRAND. From where does he get his account sales?

Mr. ANDERSON. Of course, that is true, so far as the fellow who sells in carload lots is concerned, but our people do not sell in carload lots; they have got to bring a wagonload of wheat to market, to the elevator, to the mill, and they take what they get, which is the only thing they can do, because they have not any idea what their grain ought to grade.

Mr. BRAND. As a matter of fact, every one of them that has attempted to have an idea has arrived very, very closely at the grading. For instance, I recall a young gentleman from the Minnesota valley who was at the Minneapolis hearing. He was a very critical young fellow, a very bright young fellow, who was there to scrap for anything he thought he could get, but it developed absolutely that when he attempted to apply the grades he was able to do it straight through. He complained about certain things, but so far as determining the grades was concerned he never made any claim that he could not do it.

Mr. ANDERSON. Well, I am not prepared to say that a man who gets the necessary apparatus and who knows grains fairly well can not apply these grades so as to get some idea of what the value of his grain is. It is just a question of whether or not this moisture test and some of the other tests that have been injected into the grades are of sufficient value and represent sufficient commercial difference to make it worth while to put them in there. It might be very nice to have a yardstick graduated to a thousandth of an inch in a dry goods store; that would be a very nice yardstick, but it is more practical to have one graduated into half a yard, a quarter of a yard, and an eighth of a yard. That is the whole question here, as I see it.

Mr. BRAND. We have a 12-inch ruler graduated in inches. I think there are some things about the ruler that need a little change, and that was the purpose of our hearings, but we believe that the principle is sound, and I should say that 90 per cent—easily 90 per cent—of the informed opinion has expressed the hope that we will not destroy the principle on which we are operating.

Mr. YOUNG of North Dakota. What do you mean by the "informed opinion"?

Mr. BRAND. I mean the people, for instance, who are conducting inspection work, the people who take an opportunity to try the thing out. Now, it developed at the Bismarck hearing (it was stated in private conference or in open meeting, as I recall it) that it was found in a previous hearing which had been held that none of the elevator men who were present had read the standards. I do not know how in the world we could erect standards that would be so automatic that a man could operate them if he did not read them, but that fact was brought out by Mr. Schultz, of the North Dakota Railroad & Warehouse Commission. Either in conference or open meeting I recall his making a statement—

Mr. ANDERSON (interposing). You are referring to the principles upon which you are proceeding. I do not know that I have heard them stated.

Mr. BRAND. Soundness, condition, appearance, composition, and presence of injurious foreign materials; those things represent the fundamentals on which the grades are established, all of which affect profoundly the intrinsic value of the grain.

Mr. ANDERSON. Are you still of opinion that the moisture content of wheat, up to the point of keeping quality, is a sound factor in determining grade?

Mr. BRAND. Absolutely. There is some question as to just where this moisture content should stand, and that is a question for further investigation; but, as I said before, the sections of the country which have complained most keenly about the qualifications as to moisture have suffered least by it. As I pointed out, and you gentlemen heard at the hearings at the Interior Department, only 1,105 out of 24,908 cars were graded down on account of moisture. In other words, there is no moisture in northwestern wheat this year.

Mr. ANDERSON. That is true.

Mr. BRAND. So that the shoe has not pinched, as it were.

Mr. ANDERSON. But some of us have had experiences before this year, and I think our fears are based perhaps upon former experience and that they have some basis.

Mr. BRAND. We have had at least two other years, according to our investigations, in which the moisture was less than this year. In 1913 the average moisture content was 13 per cent and in 1914 it was 13.5 per cent on the basis of all the moisture samples that we took.

Moisture content, hard red spring wheat.

Market receipts, crops 1911-1916 (six years) :		Average of all grades, by years (field samples and market receipts) :	
	Per cent.		Per cent.
Grade No. 1-----	12.9	1911-----	12.9
Grade No. 2-----	13.2	1912-----	13.7
Grade No. 3-----	13.3	1913-----	13.0
Grade No. 4-----	13.8	1914-----	13.5
Sample grade -----	13.6	1915-----	14.1
		1916-----	13.5

Mr. ANDERSON. Of course, I do not accept your basis of determination there, because I feel that you have not got the run of grain that represents necessarily a fair average of the grain. I do not believe you can get it until you have your system in operation upon practically the entire volume.

Mr. BRAND. Well, I know—I do not recall whether you do or not—but some people do not believe in the law of averages.

Mr. ANDERSON. I think they must be taken with a large grain of salt. In other words, the average height of a man is 5 feet 8 inches, but we do not make our doors on that basis.

Mr. BRAND. But we had three men in Minnesota, North Dakota, and South Dakota, spending their whole time going from thrashing machine to thrashing machine and from elevator to elevator taking samples of the loads that came in and got thousands of samples—we being absolutely impartial. We have no interest in the matter, as you know, except to get the truth, and we are working for the farmer. I want to emphasize that, because sometimes I feel that I am forced to defend myself against the accusation that I am working against the farmer, whereas I sit up day and night, Sundays and holidays, working for the farmer all the time. We are working for the farmer, and we are trying to get him full value for his products. Now, we have samples by the thousands, covering a period of six years, showing these average percentages, and determined by thoroughly capable technicians. You would not doubt the chemist if he told you there was so much chlorine in a certain sample of potassium chloride; so we have the same right to thorough belief in the accuracy of the result we get.

Mr. ANDERSON. I do not question the accuracy of your tests at all. The only thing I have any doubt about, and it may not have any basis at all, is that the samples which you got, and I do not say you did not endeavor to get them fairly, were not in sufficient volume so that the analysis represented, or had a fair basis upon which to determine, an average; that there was not sufficient volume to it.

Mr. BRAND. We have run various tests to determine when we had a sufficient number of samples on which to base a conclusion. We have done that with respect to many, many things, and we found, generally speaking, that if your sampling has been fair, if you get from 500 to 1,000 samples, you can reach an average that will vary very slightly with additional numbers.

Mr. YOUNG of North Dakota. Let me ask you this question, Mr. Brand. Supposing there is a certain quantity of wheat coming in with 13 per cent moisture, and there is about the same quantity coming in with about 14 per cent moisture. That would give you an average of $13\frac{1}{2}$ per cent, which you fix as the upper limit. Now, then, ordinarily when this wheat comes in the first thing that happens to it is that it is mixed when it gets into the terminals, and after it is mixed it reaches that average that you speak of— $13\frac{1}{2}$ per cent—but in buying, the trouble is that the part that happens to be 14 per cent is penalized. Do you not think that that works out in an injurious, unfair way? In other words, when you say the $13\frac{1}{2}$ per cent is fixed as the limit of moisture of No. 1 under the law of averages, the crop might come in and keep that level, as it is fixed in the terminal elevators, but as a matter of fact a large percentage of it will be penalized because before that admixture it was above $13\frac{1}{2}$ per cent.

Mr. BRAND. That involves two or three factors. In the first place, the standards are resulting in a general feeling throughout the trade that far less mixing will be done under the standards than ever has been done in the past; in other words, that the classification is a sufficiently accurate index of value, so that they will prefer it. It will be to their advantage to follow the grades rather than to doctor them.

In the second place, the opportunity to mix is not of itself an evil if honestly done, because it enables the buyer, through the knowledge that he has a dry lot of grain, to mix that with a slightly more moist lot of grain and to pay a little more for the moist lot. Competition forces him to pay it, and he does pay it. This is an advantage to the farmer.

Mr. ANDERSON. Should we destroy that competitive bidding for the moist lot in a lower grading so far as the seller is concerned?

Mr. BRAND. But when moisture is the factor that determines the matter he pays more than he would if some other factor which lowers intrinsic value more and which is not changeable were involved.

Mr. ANDERSON. I do not just see that.

Mr. BRAND. The third point, if I may make it, is this: It involves the whole question of whether an additional per centum of moisture under existing conditions warrants discrimination in price. At present prices of wheat an extra per cent of moisture would cost between 2 and 3 cents, so that it is a question of whether, if some water has gotten in, you shall sell the water as wheat. The point is to have it so gauged that it is not an unfair discrimination.

Mr. YOUNG of North Dakota. But you do not give any corresponding premium where there is less moisture than $13\frac{1}{2}$ per cent.

Mr. BRAND. No; that is a fault that can scarcely be obviated without great refinements of grades. I believe, personally, you should have a premium for drier grain. I believe there should be one.

Mr. YOUNG of North Dakota. Do you not think it is a great injustice to the farmers of the Northwest, for instance, or any other part of the country for you to penalize a certain portion of them because they are a little above and yet do not give the rest of them a premium when they are a little below? The same farmer may bring in one lot with a moisture of 15 per cent and another with a moisture content of 11 per cent. That all works to the advantage of the miller or dealer, who gets the best end of it.

Mr. BRAND. No; I do not think he gets the best end of it.

Mr. YOUNG of North Dakota. Why not? If it has only 11 per cent, it is certainly playing into their hands. It is worth a premium and they do not pay any premium.

Mr. BRAND. The fundamental question is whether wheat with lower moisture is worth more money than that containing more moisture.

Mr. ANDERSON. Of course, Mr. Brand, you know perfectly well that you have never heard a miller testify that he would give 1 cent more for grain having $13\frac{1}{2}$ per cent moisture in it than he would for grain having $14\frac{1}{2}$ per cent.

Mr. BRAND. They tell me they are doing that. I am not a grain buyer and know nothing about it, except that they say they will pay a premium for drier grain.

Mr. YOUNG of North Dakota. Do they pay any more when it has 11 per cent than when it has $13\frac{1}{2}$ per cent?

Mr. BRAND. I do not think they do under fixed prices, but I say in a competitive market they will.

Mr. YOUNG of North Dakota. The trouble with this system is that there are so many things in it where you do not depend on the grading itself to take care of a fellow, but some other mysterious thing called supply and demand, that only operates once in a while out in our country, to correct it. There is the trouble. This proposition has got so many refinements, as you call them, so many distinctions, and so many classifications and subclassifications, and there are so many spots where he can be penalized that unless, as you say, it is bought by somebody he will bid up for it, the result is that the fellow who sells is the fellow who is losing money.

Mr. BRAND. It is fair to consider this matter on the basis of what has happened. I think that is a fair basis on which to consider this matter. Now, let us analyze the actual results this year under the standards.

Mr. ANDERSON. If this year were an average year, that would be a fair basis.

Mr. BRAND. It does not make any difference whether it is an average year or not, because if it is a better year it will show a better percentage. We had 63-pound grain this year, and I would like to say that if there had been a competitive market they would have received premiums for it. No. 1 dark hard commands a premium of 4 cents under the fixed-price system.

Let us see what has really occurred this year, particularly in the Northwest. In the four months of August, September, October, and November 28,700 carloads of wheat were delivered in the Minneapolis market. Of that number, 5,615 cars graded No. 1 dark northern and 6,664 graded No. 1 northern. In other words, a total of 12,279 cars out of 28,700 graded 1 dark northern and 1 northern. That is, 42.78 per cent of all the wheat that moved into the Minneapolis market during the months specified graded No. 1, of these two subclasses practically 43 per cent graded No. 1. Now, in the old grading there were No. 1 hard, No. 1 northern, and then No. 2 northern. Our No. 2 is the contract basis and the equivalent of the old No. 1 northern. Hence, in order to make a comparison, we should include the No. 2 in order to determine whether the grading has

worked out fairly. On that basis, 21,582 cars of the 28,700 were graded 1 and 2. That is the equivalent of 72.2 per cent of the crop. Now, then, the old grades were less exact in some respects than our grades. The result is that some of the lower qualities fall into the next grade below, so that something in addition to those percentages should still be included if you are going to make a comparison between the two, and we have the situation of three-quarters of the crop falling in Nos. 1 and 2. That is the same, Mr. Chairman, if I may interpret it to you, as having three-quarters of the cotton crop fall in middling fair and strict good middling, practically.

Mr. ANDERSON. That shows we raised extraordinarily good wheat this year; and I think that is all it does show.

Mr. BRAND. We conducted these tests over a period from 1911 to the present time. The year 1911 was the driest year of which we have record, and the receipts show the least moisture content, 12.9 per cent; the year 1912 showed 13.7 per cent, which is practically the same as this year's conditions, and 1913 showed only 13½ per cent.

Mr. YOUNG of North Dakota. Did the wheat in any one of those years weigh as high as 63 pounds to the bushel?

Mr. BRAND. I think so. We have examined something in excess of 60,000 samples of wheat in determining upon the official standards for wheat, covering the United States as a whole. I believe there could be no fairer basis upon which to act. Permitting inferior qualities in the higher grades, such as higher moisture content, more inseparable weed seeds, less weight per bushel, will reduce the price of the grades.

Mr. YOUNG of North Dakota. Let me ask you this question. You say it would cheapen the grades. I would like to know the basis upon which you come to that conclusion. I am not asking that in an argumentative way.

Mr. BRAND. For the simple reason that if we do that we are forced to admit such qualities as will result in reducing the milling value of the wheat. It cheapens the grade, and that goes back to the farmer. It is an absolute fact that No. 1 northern under the old Minnesota grades was equivalent to No. 3 Canadian. We got No. 3 Canadian price for our No. 1. We understand the Canadians are discussing taking up our grades.

Mr. YOUNG of North Dakota. Their grades are fixed by law.

Mr. BRAND. Under the Orders in Council they have very great powers, and they are actually considering using the same grade basis that we use. The exportable surplus largely determines the price of the domestic crop. If you admit qualities which cheapen your grain, it is going to be reflected in the price, and that is going right straight back to the producer.

Mr. ANDERSON. I do not agree with the proposition that the export surplus fixes the price. I think if there is any theory that has been exploded that is it. If that were true, the Minneapolis price would be uniformly lower than the Liverpool price. If you are going to deprive us of the advantage which we have as against Liverpool, by fixing this basis on it, we shall have to deal the same as everybody else.

Mr. BRAND. We are going to have everybody deal on the same identical basis. It has already taken effect across the water. We had one of our men in England, France, and Italy, and the reports from those countries that he sent us on this proposition while he was abroad indicated that it would revolutionize their opinion of trading in American grain if they could deal on these grades.

Mr. ANDERSON. I am not questioning it at all, so far as I am concerned. In fact, I am a believer in uniformity of grade. I do not want you to understand that at all. I do think there are some things about the grades which work a discrimination against the producer, who has to sell at the local elevator, and sometimes I have thought that you had rather lost sight of the proposition—the fundamental, at least—that one of the purposes of grain standardization is to give the farmer, or the producer, the same information relative to the value of his grain as the buyer has.

Mr. JACOWAY. Wherein is the producer of grain discriminated against? Wherein does he get the hot end of the proposition?

Mr. ANDERSON. That is a very long story. Both Mr. Young and I have endeavored to point out our theory of the conditions under which he gets the worst of it under these grades.

Mr. JACOWAY. Would it be settled in the same way as the price of cotton is fixed?

Mr. ANDERSON. I do not know anything about the cotton trade at all.

Mr. JACOWAY. I have never understood the points of difference between the Bureau of Markets and the other people who come from the grain-growing States.

Mr. ANDERSON. Mr. Brand has stated it, I think, very frankly. For instance, these grades are based upon the theory that grain carrying $13\frac{1}{2}$ per cent of moisture has a commercial value higher than grain carrying $14\frac{1}{2}$ per cent of moisture. On the other hand, Mr. Young and I contend that up to the point where the grain does not have more moisture than will permit it to keep under normal conditions, it ought not to be a factor in the grading at all. I think that fairly states the points of difference.

Mr. BRAND. If I may interpolate there, Mr. Anderson, a part of our reasoning on the proposition is due to the fact that the miller has got to sell his flour upon a $13\frac{1}{2}$ per cent moisture basis, and if he buys $14\frac{1}{2}$ per cent moisture wheat he has got to subtract that moisture.

Mr. ANDERSON. But if he buys 11 per cent wheat he puts it in, so that is about an even break on that proposition.

The other point of difference is particularly with reference, as Mr. Brand has said, to whether grain having a percentage of wheat of a certain variety and having a certain percentage of another wheat of another variety should be degraded by reason of the admixture. There are probably other minor points of difference, but those are the two that have been discussed to-day.

Mr. BRAND. The fundamental point about the percentages of mixture is this: We examined thousands of samples—Dr. Duvel's men have been doing that for a period of many years—and we found that the farmer's grain does not contain these mixtures. These mixtures arise at the mixing houses. Therefore, we believed that we

assisting the farmer by confining our grades to the percentages which are occurring on an average in his operations rather than to the shipment from terminal markets or reshipment of grain from terminal markets, where there has been an opportunity for mixing.

(At this point, at 3.10 p. m., the committee took a recess to permit members to respond to a call of the House, the session being resumed at 3.42 p. m.)

Mr. ANDERSON. If we are about to proceed, I think that there is nothing further that I want to ask, but I should like to insert some tables, gotten up by the Minnesota State grain-inspection service, showing the number of cars of No. 2, No. 3, and No. 4 dark red northern and northern red spring which would have graded No. 1 under Minnesota grades, and the money loss which the present grading represents to the farmer on the basis of this inspection, and also a statement of milling tests, indicating the difference in mill values of grains of the different grades.

Mr. YOUNG of North Dakota. What date is that?

Mr. ANDERSON. That covers the month of October and some of it October and November, 1917.

Mr. BRAND. Was that confined to that month?

Mr. ANDERSON. October and November, I think. The milling tests cover October and November, and some of the tests only November, I think. I am not sure about that.

The CHAIRMAN. Mr. Anderson, wouldn't it be better if Mr. Brand might have the opportunity of analyzing those figures and make such statement with reference to them as he sees fit and proper?

Mr. ANDERSON. He has as much opportunity to analyze those as I have his.

Mr. BRAND. These are not secret figures. They can be put in the record. They are to be published, anyway. I understand those are for October and November. They are from the same source. I can just as well put in the result of inspection from the 1st of August, when the standards went into effect, until the 1st of January. There is no reason why they can't be put in if you care to have them.

The CHAIRMAN. You submit your figures, Mr. Anderson, for the purpose of showing just what? I am only interested in the subject of getting the facts in the record.

Mr. ANDERSON. I am submitting them for what they are worth. They represent the same inspections by the same men as make the Federal inspections at the terminal offices, and they simply show the number of carloads of grain which graded No. 2, No. 3, and No. 4 of the different varieties, under the present gradings, and how they would have graded under the Minnesota grades.

The CHAIRMAN. I see. Mr. Brand, what figures have you there to come in contact with these?

Mr. BRAND. We have a statement showing the grading of all cars received, the number of cars of each grade, and the percentage of each grade. The particular factor on which they were graded down is shown in all cases, so that by examination of the table you can see just how many cars were graded down on account of foreign materials, how many on account of mixture of other wheat, moisture percentages, etc.; also other figures which show the comparison be-

tween the number of cars of these grades this year with the number of cars and the percentages of the grades in other years.

Mr. ANDERSON. I think, Mr. Chairman, it will be desirable to have that matter in the record.

The CHAIRMAN. You mean both propositions?

Mr. ANDERSON. Yes. It makes it much more definite and more easy to get at. If the rest of the committee is situated as I am, I have to do it in the middle of the night and have to take it home.

The CHAIRMAN. The only thought I had was that a list of figures, without some analysis of the figures, would not be intelligible.

Mr. ANDERSON. There is a statement in connection with the figures which shows what the figures represent.

The CHAIRMAN. Mr. Brand, you also had some figures to put in at this time. What do you propose to show by them?

Mr. BRAND. As an example of the comparisons, we find, say, in 1915, under the Minnesota grades, that there was eight-tenths of 1 per cent of No. 1 hard spring wheat. This year we find a very much higher percentage, and we find, as I recall it, something like 42 per cent. It involves a comparison of the grades and a comparison of the number of cars that have fallen in the different grades in different years, trying to arrive at a comparison of the results of the different gradings.

The CHAIRMAN. Without objection, these two sets of figures will be inserted in the record in the proper place.

(The statements referred to follow:)

MINNESOTA INSPECTION DEPARTMENT STATEMENT.

Statement showing number of cars of spring wheat which graded No. 1 dark northern spring, No. 1 northern spring, and No. 1 red spring under the Federal grain grades during the month of November, 1917, at Minneapolis, Minn., as well as the additional number of cars of spring wheat which would have graded No. 1 northern spring under the Minnesota State grain grades as in force up to August 1, 1917, with the percentages as compared with the total number of cars of spring wheat inspected at the Minneapolis inspection department:

	Number of cars.	Per cent.
Grain which graded No. 1 dark northern, No. 1 northern, and No. 1 red spring under Federal grain grades additional.....	3,323	31.75
Grain which would have graded No. 1 northern spring under the Minnesota grain grades:		
No. 2.....	1,747	.....
No. 3.....	215	.....
No. 4.....	48	.....
	2,010	19.25
Total spring wheat inspected.....	10,484	100.00

In other words, under the Federal grain grades only 31.75 per cent of the total number of cars of spring wheat graded No. 1, whereas under the old Minnesota State grades there would have been 51 per cent of the total number of cars of spring wheat inspected at Minneapolis grading No. 1 northern spring.

Statement showing number of cars of spring wheat which graded No. 1 dark northern spring, No. 1 northern spring, and No. 1 red spring under the Federal grain grades during the month of October, 1917, at Minneapolis, Minn., as well as the additional number of cars of spring wheat which would have graded No. 1 northern spring under the Minnesota State grain grades as in force up to

August 1, 1917, with the percentages as compared with the total number of cars of spring wheat inspected at the Minneapolis inspection department:

	Number of cars.	Per cent.
Grain which graded No. 1 dark northern, No. 1 northern, and No. 1 red spring under Federal grain grades.....	4,071	32.79
Additional grain which would have graded No. 1 northern spring under the Minnesota State grain grades during October, 1917:		
No. 2 sp.....	2,049	.....
No. 3 sp.....	337	.....
No. 4 sp.....	75	.....
	2,461	19.83
Total spring wheat inspected.....	12,413	100.00

In other words, under the Federal grain grades only 32.79 per cent of the total number of cars of spring wheat graded No. 1, whereas under the old Minnesota State grain grades there would have been 32.61 per cent of the total number of cars of spring wheat inspected at Minneapolis grading No. 1 northern spring.

Statement showing number of cars of spring wheat graded No. 1 dark northern, No. 1 northern, and No. 1 red spring under the Federal grain grades during the months of August and September, 1917, at Minneapolis, Minn., as well as the additional number of cars of spring wheat which would have graded No. 1 hard spring and No. 1 northern under the Minnesota State grain grades as in force up to August 1, 1917, and the actual loss to the producer on account of said cars grading lower than No. 1 hard spring and No. 1 northern spring under the Federal grain grades:

	Number of cars.	Per cent of total cars inspected.	Loss to producer.		
			Busbels.	Price.	Amount.
Grain which graded No. 1 dark northern, No. 1 northern, and No. 1 red spring during August and September, 1917.....	4,637	31.4	.....	Cents.	.....
Additional grain which would have graded No. 1 hard spring and No. 1 northern spring under the Minnesota State grain grades as in force up to Aug. 1, 1917:					
No. 2.....	1,897	.....	2,275,400	3	\$68,292
No. 3.....	321	.....	385,200	6	23,112
No. 4.....	90	.....	108,000	10	10,800
No. 5.....	1	.....	1,200	10	120
No. 6.....	1	.....	1,200	10	120
	2,310	15.6	2,771,000	.....	102,444
Total grain inspected during August and September, 1917.....	14,768	100.0	.....	.....	.....

ANALYSIS OF LICENSED INSPECTORS' REPORTS.

According to the daily reports of the licensed inspectors sent to the office of Federal grain supervision, Minneapolis, Minn., the following number of cars of hard red spring wheat arrived in Minneapolis during the months of October and November, 1917, were graded No. 1 and No. 2 under the United States standards for hard red spring wheat.

Month.	Total cars of hard red spring wheat inspected on arrival.	Grade No.	Number of cars grading No. 1 and No. 2.	Per cent of total cars grading No. 1 and No. 2.
October, 1917.....	9,072	1 2	3,975 2,615	43.8 28.8
Total.....	9,072	.....	6,590	72.6
November, 1917.....	7,904	1 2	3,278 2,331	41.5 29.5
Total.....	7,904	.....	5,609	71.0

During the month of October, 1917, 9,072 cars of hard red spring wheat were inspected and graded on arrival in Minneapolis, and of these 3,975 cars, or 43.8 per cent, graded No. 1, and 2,615 cars, or 28.8 per cent, graded No. 2. The total of the two grades was 6,590 cars, or 72.6 per cent, of the hard red spring wheat receipts. Grades Nos. 1 and 2 under the Federal standards are the grades which represent, for comparison, the old No. 1 hard and No. 1 northern spring under the Minnesota standards.

During November, 1917, 7,904 cars of hard red spring wheat were inspected and graded on arrival in Minneapolis, 3,278 cars, or 41.5 per cent, grading No. 1, and 2,331 cars, or 29.5 per cent, grading No. 2. The total was 5,609 cars, or 71 per cent, grading No. 1 and No. 2 under the Federal standards, as compared with the former Minnesota grades of No. 1 hard and No. 1 northern spring.

The third table submitted under the Minnesota inspection department statement sets forth a tabulation of 2,310 cars grading from No. 2 to sample grade, which it is claimed would have graded No. 1 hard spring and No. 1 northern spring under the Minnesota standards, and shows a loss of \$102,444 to the producer because of discounts. In making any comparison of the number of cars falling into the grades No. 1 dark northern, No. 1 northern, and No. 1 red spring under the Federal standards, it must be remembered that No. 2 is the contract or basic grade, and that the No. 1 grade is the premium grade, while under the Minnesota standards the No. 1 northern grade was the basis of contract. Assuming some difference in the requirements of the Federal standards with those of corresponding grades in the Minnesota standards, the No. 1 grades of hard red spring wheat at the present time correspond with the No. 1 hard red spring (the old premium grade) of the Minnesota standards. The No. 2 grades of hard red spring wheat correspond with the old No. 1 northern spring. The price differential shown in making the calculation of loss claimed was in effect only during a portion of the period covered, and since November, 1917, the discounts applied to the lower grades have been very materially reduced.

The table indicating the \$102,444 loss covers grading at Minneapolis during August and September, 1917. As a matter of fact, during those months 1,759 cars there received the premium grade of No. 1 dark northern, which actually gave the seller a premium of 7 cents per bushel over the Federal grade No. 2 northern, which corresponds with the former Minnesota contract grade (No. 1 northern spring). On the basis of 1,200 bushels per car, the premium during these two months amounted to \$147,756. It is also to be considered that No. 2 dark northern, under the present standards, is actually carrying a premium of 1 cent per bushel over the present No. 1 northern, or a premium of 4 cents over the grade corresponding with the former Minnesota No. 1 northern. Five hundred and sixty-four cars at Minneapolis during August and September received this grade, and the premium at 4 cents amounted to \$27,072. The following tables indicate for comparison grades in the Federal standards, which are equal to or higher in requirements than the former No. 1 northern spring grade in Minnesota. The three higher grades shown have received, since fixed prices have been in effect, and are receiving at the present time, premiums over the equivalent grade to No. 1 northern spring of Minnesota. The premiums on the two grades, No. 1 dark northern

and No. 2 dark northern alone, during these two months, as shown above, amounted to \$174,828 without taking into consideration the premiums received on cars of No. 1 northern spring wheat.

Table of comparison of Minnesota standards with Federal standards for hard red spring wheat—Grades No. 2 northern spring to No. 1 dark northern spring.

Standard.	Grade.	Test weight per bushel (pounds).	Inseparable foreign material.		Dark hard kernels.
			Total.	Special limits wild vetch and kinghead.	
Federal.....	No. 1 dark northern spring.	59	0.5	0.25	85 and over.
Minnesota.....	No. 1 hard spring.....	58	.0	.00	75 and over.
Federal.....	No. 2 dark northern spring.	57	1.0	.5	85 and over.
Minnesota.....	.....	.....	.....	.....	.....
Federal.....	No. 1 northern spring.	59	.5	.25	Under 85; over 25.
Minnesota.....	.....	.....	.....	.....	.....
Federal.....	No. 2 northern spring.	57	1.0	.5	Over 25; under 85.
Minnesota.....	No. 1 northern spring.	57	1.0	.5	Less than 75.
Federal.....	No. 3 northern spring.	55	2.0	1.0	Over 25; under 85.
Minnesota.....	No. 2 northern spring.	55	2.0	1.0	Less than 75.

The factors which are really comparable in the two sets of standards are the test weight per bushel and the maximum limits of inseparable impurities, i. e., weed seeds, etc. It will be noted that the requirements for the Federal grade of No. 1 dark northern spring wheat are higher than those under the Minnesota standards for No. 1 hard spring, in that the test weight must not be less than 59 pounds, as compared with 58 pounds; that the requirements for the dark, hard kernels are 85 per cent, as against 75 per cent in the Minnesota standards; but that 0.5 per cent of inseparable impurities are permitted, of which 0.25 per cent may consist of kinghead and wild vetch, while the old No. 1 hard spring permitted no inseparable foreign material.

No grade under the Minnesota standards can be closely compared with the Federal grade of No. 2 dark northern spring, on account of the higher percentage of dark, hard, vitreous kernels required.

No grade under the Minnesota standards can be closely compared with the Federal grade of No. 1 northern spring because of the test weight of 59 pounds required.

From the foregoing tables and explanations it will be seen that absolute comparison of the amount of grain falling into each of the Federal grades and the prices received therefor can not be made with conditions as they would have existed under the Minnesota standards. The Minnesota No. 1 northern was considered as the equivalent in grade only to the No. 3 of the Canadian standards, and in export transactions sold upon the same basis. With fixed prices made upon the basis of Minnesota No. 1 northern, unquestionably the basic price would have been made materially less than it now is. The Minnesota standards included one grade—No. 1 hard—above their No. 1 northern, the latter being the equivalent of the present No. 2 northern. The percentage of the crop falling into their premium grade has heretofore been comparatively small, never exceeding 15.3 per cent (year ending Aug. 31, 1914). The following table, taken from the thirtieth annual report of the chief inspector of grain, indicates the percentages of grades of spring wheat during the preceding four years. An additional column, showing the percentage of No. 1 hard wheat for the year 1916, has been added to this tabulation.

Grades.	Year ending Aug. 31—				
	1912	1913	1914	1915	1916
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
No. 1 hard.....	0.3	1.5	15.3	0.8	5.4
No. 1 northern.....	21.4	43.9	44.4	22.6	32.2
No. 2 northern.....	30.4	22.7	16.3	21.4	22.2
No. 3 northern.....	18.7	5.6	5.9	21.1	9.3
Rejected northern.....	6.1	.05	.2	12.3	.8
No grade northern.....	13.8	13.7	1.4	2.5	4.2
No. 1 durum.....	1.6	4.9	7.2	3.1	3.5
No. 2 durum.....	1.2	3.2	2.9	3.5	4.8
No. 3 durum.....	.8	.3	.2	2.8	2.9
No. 4 durum.....	.2	.05		1.3	.6
No grade durum.....	.5	1.2	.1	.2	1.3
Sample grade.....				.8	1.2
Mix, all grades.....	1.1	.1	4.8	4.7	7.1

The three following tables are inserted with a view to showing the range of moisture found in hard red spring wheats since the putting into effect of the official standards under the United States grain-standards act, to show the effect of the different factors in the grading of the wheat, and the number of cars falling into the different grades. The tables cover the period August 1 to November 30, 1917:

Report of all moisture tests of wheat made by the Minnesota Grain Inspection Department, Minneapolis, Minn., Aug. 1 to Nov. 30, 1917.

Moisture test (percentage) :	Number of cars.
Below 12 -----	142
12.1 to 13.5 -----	1,357
13.6 to 14.5 -----	1,810
14.6 to 15.5 -----	673
Above 15.5 -----	180
Total -----	4,162

Of 32,433 cars of hard red spring and common and red durum wheat inspected at Minneapolis, Minn., from August 1 to November 30, 1917, only 4,162 cars were tested for moisture. It should be remembered that the moisture tests were made probably on line cars only. The above table shows the moisture content of the cars tested.

“In” inspections of hard red spring wheat made by Minneapolis Inspection Department during September, October, and November, 1917.

United States grade.	Total samples.	Samples graded down numerically on account of the single determining factor.								
		Weight per bushel.	Moisture.	Damage other than heat.	Heat damage.	Total inseparable foreign material.	Special inseparable foreign material.	Total wheat of other classes.	Special wheat of other classes.	Sub-class only.
Number 1.....	11,454									
Number 2 ¹	7,114	2,977	699	229	21	926	1,146	12	173	3
Number 3.....	2,792	736		94	5	459	938	6	101	4
Number 4.....	1,944	129	342	44	10	223	882	5	92	5
Number 5.....	641	40		44	23	53	405		2	
Sample.....	963	42	64	54	16	13	363	1	72	
Total.....	24,908	3,924	1,105	465	75	1,674	3,734	24	440	12
Per cent of total.....		15.7	4.4	1.8	0.3	6.8	15.0	0.1	1.8	Trace.

¹ All of the 7,114 cars of hard red spring wheat grading No. 2, with the exception of 545 cars of No. 2 red spring, were deliverable on contract on the same basis as the former Minnesota No. 1 northern.

Total of car inspections of hard red spring wheat on arrival at Minneapolis, from Aug. 1 to Nov. 30, 1917.

Subclass.	Cars by grades.					Sample.	Total.
	1	2	3	4	5		
Dark northern.....	5,615	2,411	721	284	53	79	9,163
Northern spring.....	6,751	4,902	2,227	1,736	748	1,207	17,571
Red spring.....	506	545	258	212	73	186	1,780
Red spring humpback.....	26	53	46	41	12	8	186
Total.....	12,898	7,911	3,252	2,273	886	1,480	28,700

Subclass.	Percentage of total cars of each subclass received by grade.					Sample.	Per cent of total cars in each subclass.
	1	2	3	4	5		
Dark northern.....	61.2	28.3	7.9	3.1	0.6	0.9	31.93
Northern spring.....	38.4	27.9	12.7	9.9	4.2	6.9	61.22
Red spring.....	28.4	30.6	14.5	11.9	4.1	10.5	6.20
Red spring humpback.....	14.0	28.5	24.7	22.1	6.4	4.3	.65
Total.....	44.64	27.56	11.33	7.92	3.10	5.45	100.00

The CHAIRMAN. Any further questions?

Mr. YOUNG of North Dakota. In just about 10 minutes I think I can cover what I have in mind. I would like to get your idea as to what was intended in the passage of the United States grain-standards law in respect to fixing the grades in such a way as to encourage or compel farmers to raise a better grade of grain, or as to whether there is anything in the law at all making it your duty to do anything along that line.

Mr. BRAND. The whole structure of these standards is based upon the provision of a series of qualities, logically constructed, into which all of the wheat that is produced in the United States would properly fall. Any effect toward the improvement of the quality of grain was due purely to economic reasons, giving the better price for the better qualities. It is purely an incidental matter. We are glad when anything that we can do as a department does result in an improvement of farming. The structure of these grades, however, was not aimed specifically at that matter.

Mr. YOUNG of North Dakota. Some statements made by Dr. Duval at the first hearing here in Washington were rather along the line of securing better quality, the growing of a better quality of wheat, and that seemed to be a view entirely antagonistic, you might say, to the view of the farmers themselves, because the ordinary farmer wants to raise just as good wheat as he can, and usually if his wheat is not of a high quality it is because of climatic conditions rather than on account of the fact that he has not been careful in selecting his seed and preparing his ground. Now, the viewpoint of the people out in our section of the country is that the grading should be strictly along the line of having the Government place a mark upon the grain, which would not only let the seller know what he is selling but also let the buyer know what he is buying, even if he is hundreds of miles away. As I understand it, your department is not proposing to do that.

Mr. BRAND. We believe, Mr. Young, that it is our duty as a part of the Department of Agriculture to do anything we can properly do to improve farming and farming practices. These grades have not been constructed with the idea of the penalization of any one, but rather to provide a scale into which the crop would fit. I heard the remarks that have resulted in this particular question. They related to durum wheat. The durum wheats have become more and more mixed, with the result that our durums are so badly mixed that they are rather seriously discriminated against for export purposes. The statement was made in that connection that we would be glad if the standards would result in a purer run of durum.

Mr. YOUNG of North Dakota. Now, there is another proposition. I understood you to say at the time of the hearing last month—that is, the hearing in connection with the fixing of standards—that you now pay part of the expenses of conducting the experimental mill and baking laboratory, etc., at Fargo?

Mr. BRAND. Yes; we have a cooperative arrangement with the agricultural college, and we have three men, I think, stationed there.

Mr. YOUNG of North Dakota. Up to date I have never known either Dr. Duvel or yourself to accept the work done by that department; that is to say, when their bulletins are put out showing what the milling values of the different wheats are they are not accepted by you, for the reason that you claim they are not scientific; but these others coming from commercial laboratories you have been willing to accept.

Mr. BRAND. That is not a fair accusation at all. We are willing to accept any figures which on analysis indicate that they are correct.

Mr. YOUNG of North Dakota. Well, it would seem as though the figures from the plant at Fargo—where you say you have men stationed, whose salaries you pay and also a part of their expenses—ought to stand higher than those that come from commercial laboratories at Minneapolis.

Mr. BRAND. Mr. Young, you will agree that, just plain arithmetically, some of those figures were so wrong that we could not accept them. We took those figures and corrected them, using their own data, and then were able largely to accept them. But where the conclusions seem to be erroneous, when based on the data of those presenting them, we feel compelled to follow only what the data indicate.

Mr. YOUNG of North Dakota. Don't you think in a matter of this kind, which is of such tremendous importance to the wheat growers and the millers of wheat, that the department ought to have a plant somewhere upon which they could absolutely rely and regard the work done there as being accurate and dependable? Don't you think there ought to be some such place as that either at Fargo or Washington?

Mr. BRAND. That is a question that has been before us for a number of years—whether the department should not have an experimental mill under its own control, where absolutely every condition could be under supervision—and I am inclined to the view that we have come nearly to the time when it will be necessary to do that.

Mr. YOUNG of North Dakota. You know I introduced a bill on that subject last year.

Mr. BRAND. It seems to be a question of expenditure rather than anything else. There are many things that we could determine much—

better if we had such facilities. However, there have been so many other things to be done that we have rather tried to attack them, and use existing facilities, than to buy the mill. That has been my own thought. My own thought is that we ought to be able, as in many other things, to get these facts in cooperation with existing agencies rather than by providing special facilities; but the problem becomes more and more acute, and I suppose the time will come when Congress will feel that the department should no longer rely upon outside sources for that kind of information.

Mr. YOUNG of North Dakota. I do not think it is a question of Congress. I am satisfied Congress is ready to act just as soon as the department desires it, but when this matter came up last year there was no recommendation from the department. I introduced a bill that would have authorized the establishment of a small experimental mill with chemical and baking laboratories. So far as I am personally concerned, I would just as soon have you do that work at Fargo as at Washington. But wherever it is done I think it ought to be done in such a way that you will absolutely accept the results. It does not seem to me that this department ought to rely upon any figures produced by the commercial laboratories such as are ordinarily used by the big mills. In those laboratories it is only human nature for them to be friendly to their own customers, and their own customers are the mills. It would look to me, therefore, as though your department ought to have a laboratory of its own. Now it could be at Fargo or at Washington. I did not introduce the bill at all this year because it occurred to me that the matter might be brought up here in the committee. I have no pride at all, personally, in how this is done so long as it is done, but I am very anxious to see the Government have experimental work in the milling of wheat done under its own control, so that it will accept the results secured. When we get that, then it seems to me we can settle some of these questions as to whether the flour mills are warranted in making some of these fine distinctions in the buying of the wheat.

It is common knowledge in our section of the country that the years that the flour mills make the big dividends and make what they call a killing is when they have low-grade wheat. A year when we have no No. 1 at all is the year when the flour mills get rich. And it is also pretty well understood that the thing that gladdens the heart of a flour miller is when he sees a car of No. 4 or No. 5 wheat come in. These figures that Mr. Anderson has put in the record this afternoon in respect to milling tests out there, if they are accurate and dependable, show that No. 3 and No. 4 give you practically the same results as No. 1; and, if so, naturally, the flour miller is happy when the wheat is not up to the artificial standard; it is naturally to his interest to have wheat graded low, and if anybody grades it high, if they can get an appeal and have it regraded and graded down, it is to their interest.

These are the questions that we are very anxious for the department to investigate. We would like to have this department go right through that question to the end, with the idea of giving honest effect to the milling values.

I realize that from all the figures you have given in the past you have claimed to fix your grades according to the milling value, and

that is said to be the basis, but still you have had to depend upon the milling value as given to you to a large extent by commercial laboratories and perhaps by mills themselves. This work that ought to have been done by the Government itself has not been done, except at Fargo, and if there have been slight inaccuracies there in mathematics, it is doubtless because the one who has done the work there has not had a full corps of assistants and hence has not been able to work it out as accurately as you have down here.

Mr. BRAND. Of course, the location of such a plant is a rather important question. There are so many different kinds of flour and wheat, and really the intimate problems are very much greater in a number of other classes of wheat than they are in the hard red spring. The hard red spring stands on its own feet. It doesn't need anyone to recommend it. But with some other wheats there are other serious questions that need determination. Personally, I believe we are working toward the time when it will be desirable to have such facilities at our command. I have worked always on the principle, Mr. Young, that if we can get work done without buying a lot of machinery, which means an expensive overhead expense, we ought to do it. But I have never thought that we ought to sacrifice accuracy to that principle of economy.

Mr. YOUNG of North Dakota. Can you get that kind of work with the present facilities?

Mr. BRAND. I am not prepared to say that we can. There are two lines of work that we will have to pursue more and more, in my opinion. One is in this particular line of work, and the other is storage work. That has not been mentioned at all. Mr. Chairman, there are a great many contradictions in the matter of moisture in grain, both in transportation and in storage. Much work needs to be done on that. We have much information on that subject, but the contradictory statements that are current show how important it is to have additional facts.

Mr. JACOWAY. You had a great big object in having this grain-standards bill put into law, and a great deal of money has been appropriated to carry out the provisions of it. I just wanted to ask you if you are making a success of it, and think you are getting results?

Mr. BRAND. I think it is fair to say that we are. We have some complaints of it but, by and large, over the United States generally we are having excellent results and general satisfaction. There are certain features on which there are complaints and criticism.

Mr. JACOWAY. Do you get the better results for the producer or for somebody else?

Mr. BRAND. I think we are getting the best results for the producer because we are securing a uniformity of grading; we are doing away with the switching of grades between markets, and we are supervising things just as closely as we can. We have some small matters with which we have not the power to deal. We have some matters with reference to standards themselves in which we are now considering making changes, absolutely in good faith. There has been some feeling in the Northwest, particularly, that we are merely talking about making changes rather than doing anything to make

them. That isn't fair to us. We are really holding these meetings with a view to change where we find injustice is being done.

Mr. YOUNG of North Dakota. The Dakota Farmer, which has a large circulation in Dakota and Wyoming, wrote to me last week and wanted to know whether I was in favor of repealing this law. I wrote them that there had been a very great deal of complaint from farmers throughout North Dakota in respect to the law, and that personally I was not at all pleased with the way that the new standards had worked out in North Dakota, but that we had had these hearings, and it seemed to me that we ought to run along at least for another year and give you gentlemen the benefit of applying the experience gained last year to effecting needed changes. Now, as I understand you, you expect to modify these standards to some extent before the next crop is harvested?

Mr. BRAND. We do, and we are seriously considering how far those modifications ought to go. We fear that if we were to adopt the extreme suggestions that have been made in North Dakota, and made in perfect good faith, we would do violence to the grain industry of the country, and particularly to the producer.

Mr. YOUNG of North Dakota. I would like to print certain statements to supplement that made by Mr. Anderson. Congressmen Baer and Knutson, myself, and a number of railway commissioners from the Northwest called on the directors of the United States Food Administration Grain Corporation in November. As a result important concessions were made in respect to fixed prices for grain. I offer data in respect to same to be printed. Also data in respect to certain milling and baking tests.

The CHAIRMAN. Without objection, it may be submitted.
(The statement referred to follows:)

UNITED STATES FOOD ADMINISTRATION,
42 Broadway, New York City, December 1, 1917.

HON. GEORGE M. YOUNG,

House of Representatives, Washington, D. C.

MY DEAR MR. YOUNG: We are in receipt of your favor of the 28th ultimo in reference to the basis of discount on wheat established by this agency of the Food Administration.

We inclose the schedule to you which is already in effect in Minneapolis and trust the same will be acceptable to you.

Very truly, yours,

FOOD ADMINISTRATION GRAIN CORPORATION,
E. G. CROWELL, Vice President.

Section A, paragraph 11 (Dec. 1, 1917): Each zone agent will be guided in the purchase of wheat in his zone by the following basis of premiums and discounts by grades:

Basis price, premium, and discounts by grades.

No. 1 grade.	Premium.	Discount.	No. 1 grade.	Premium.	Discount.
Dark Hard Winter.....	0.04		Humpback.....		0.10
Hard Winter.....	Basic.	Basic.	Amber Durum.....	0.04	
Yellow Hard Winter.....		0.04	Durum.....	Basic.	Basic.
Red Winter.....	Basic.	Basic.	Red Durum.....		.07
Soft Red Winter.....		.02	Red Walla.....		.07
Dark Northern Spring.....	.04		Hard White.....	Basic.	Basic.
Northern Spring.....	Basic.	Basic.	Soft White.....		.02
Red Spring.....		.02	White Club.....		.04

No. 2 wheat 3 cents less than No. 1.

No. 3, according to quality, not higher than 4 cents under No. 1.

No. 4, according to quality, not higher than 5 cents under No. 1.

No. 5, according to quality, not higher than 6 cents under No. 1.

Except as provided in the following paragraphs:

Sample wheat.—Wheat graded "sample," may be discounted and priced on its merits according to class and subclass, taking into consideration the cause or causes for so grading, but in no case higher than 4 cents under the No. 1 grade of the subclass represented.

Smutty wheat may be discounted and priced on its merits and according to its class and subclass, and the grade placed upon it.

Moisture content.—Wheat which is graded down solely because of a moisture content in excess of that allowed in the grade it would otherwise take, may be discounted and priced on its merits according to class and subclass, at a reasonable discount for each one-half of 1 per cent of moisture in excess of grade allowance, but in no case higher than 4 cents under the No. 1 grade of the subclass represented.

Mixed wheat.—Wheat which is graded down or graded "mixed," solely because of an admixture of wheat of another class, or other classes, may be discounted and priced on its merits, but in no case higher than 3 cents under the No. 1 grade of the predominating subclass in the mixture.

Red Durum wheat.—Wheat of any other class or subclass, which is graded into the subclass "Red Durum," because it contains to exceed 10 per cent of the variety Red Durum, may be discounted and priced on its merits, but in no case higher than 4 cents under the No. 1 grade of the predominating subclass represented.

Humpback wheat.—Wheat of any other class which is graded into the class "Red Spring Humpback," because it contains to exceed 10 per cent of the variety Humpback may be discounted and priced on its merits, but in no case higher than 4 cents under the No. 1 grade of the predominating subclass represented.

Pacific coast wheat.—Must be priced according to the schedule of discounts for test weight per bushel and Bulletin No. 10, both issued by our zone agent at Portland, Oreg.

Advisory committee.—If an advisory committee on quality is formed by any agent to assist him, be sure the recommendation of such committee be based as to discount under the No. 1 price, and not a recommendation of an outright price on any particular sample.

UNITED STATES FOOD ADMINISTRATION.

FOOD ADMINISTRATION GRAIN CORPORATION.

New York City, December 27, 1917.

HON. GEORGE M. YOUNG,

House of Representatives, Washington, D. C.

MY DEAR MR. YOUNG: I have your telegram to-day. Our present instructions to our agencies, in regard to wheat are as follows:

No. 1 northern wheat, 3 cents over No. 2.

No. 3 northern wheat, 3 cents under No. 2.

No. 4 northern wheat, 6 cents under No. 2.

No. 5 northern wheat, 9 cents under No. 2.

With the provision that wheat grading below No. 2 may bring a premium over ordinary wheat of the grade, according to quality, up to 2 cents per bushel premium over the grade price; and, further, that wheat grading below No. 2, for the reasons of moisture test or admixture of other wheat, may sell on its merits, in the judgment of our agents, regardless of the grade, to as high a price as 1 cent under No. 2 wheat.

These last distinctions, with their discretions, have been given our agents for some time, and they have corrected most of the inequalities, and, I think, most of the substantial injustices which has been demonstrated.

Yours, truly,

JULIUS H. BARNES, President.

Presented by Representative Young, of North Dakota. Samples received from the State board of grain appeals at Minneapolis, Minn.; milling and baking tests reported October 9, 1917:

Laboratory No.	Car No.	Grade.	Weight per bushel.	Flour yield.	Loaf volume.	Ex-pansi-meter.	Water used.	Color.	Tex-ture.	Gluten.
1B.....	G. N. 15893..	1 D°Sp..	61	68	1,371	720	57.7	98W	98	10.90
2B.....	Soo 32922....	1 °Sp....	61	70	1,418	720	56.6	96W	98	10.74
15B.....	18108.....	...do....	60½	71	1,353	700	61	98Y	98	11.80
Average...			60.8	69.7	1,380	713.3	58.4	97.3	98	11.15
3B.....	G. N. 2060...	3 D°Sp..	62	72.5	1,454	680	58.8	98Y	96	10.34
6B.....	Mil. 70298....	3 °Sp....	62½	69.1	1,364	740	59.9	96GW	96	10.10
17B.....	C. 109886.....	...do....	61	68	1,395	720	60.8	97GW	98	11.10
13B.....	G. N. 127685..	3 D°Sp..	56½	65	1,450	720	61.1	98Y	98	15.15
16B.....	C. O. 2703....	...do....	61	69.9	1,371	750	59.8	97	97	13.20
Average...			60.6	68.9	1,461	722	60.8	97.2	97	11.98
4B.....	G. N. 210800..	4 D°Sp..	60	70.9	1,436	730	59.3	98Y	98	14.15
7B.....	Soo 12554....	4 °Sp....	61	70.8	1,421	750	58.3	98Y	98	12.45
12B.....	Soo 109788....	4 D°Sp..	60½	69.8	1,451	700	60	97	98	12.35
14B.....	Soo 103656....	...do....	60½	69.8	1,479	760	60.8	98Y	98	13.85
Average...			60.5	70.8	1,447	735	59.6	97.8	98	13.20
5B.....	A. G. S. 11039	5 °Sp....	60½	68.3	1,356	690	61.5	95	95	10.18

Car 206077 contained 1.3 per cent inseparable foreign matter.
Car 210800 contained 2.5 per cent rye.
Car 11039 contained 2.5 per cent inseparable foreign matter (mostly KH).
Car 70298 contained 1 per cent cockle.
Car 2703 contained 2 per cent rye.
Car 109886 contained 1.5 per cent KH and Bly.
Car 12554 contained 2.5 per cent inseparable foreign matter (mostly ckl.).
While none of these samples show better than 98 in color, it should be noted that a high-grade patent was used as a standard and the experimental mill did not produce as short a patent as the standard. Allowance should be made for this.

(Signed) J. A. HUMMEL, *Chemist.*

State grain-inspection department testing-laboratory report on wheat samples milled and tested during months of October and November, 1917:

Car No.	Grade.	Test weight.	Flour yield.	Loaf volume.	Ex-pansi-meter.	Water used.	Color.	Qual-ity.	Flour gluten.
			<i>Per ct.</i>			<i>Per ct.</i>			<i>Per ct.</i>
Average 2 cars.....	1 D. sp.....	60	69.3	1,320	725	59.3	99	99	11.33
Average 11 cars.....	2 D. sp.....	59.2	69.3	1,405	800	60.9	97.7	98	12.79
Average 8 cars.....	3 D. sp.....	59.7	67.9	1,403	754	61.3	97.5	98	13.18
Average 4 cars.....	4 D. sp.....	59.8	69.2	1,472	765	60.5	98	98	13.88
1 car.....	S. G. Dsp. Smt.	61	69.8	1,362	760	61.3	98	98	13.85
Average 4 cars.....	1 sp.....	59.9	68.3	1,358	740	58.9	97	96	11.87
Average 3 cars.....	3 sp.....	61.5	68.9	1,349	755	58.9	97	97.3	10.63
Average 2 cars.....	4 sp.....	60.5	69.6	1,423	785	58.9	97.5	98	11.77
1 car.....	5 sp.....	60.5	68.3	1,356	690	61.5	95	95	10.18

Comments concerning the information submitted to Mr. Young, of North Dakota, by the Minnesota Board of Grain Appeals, October 9, 1917, giving comparisons of milling and baking tests of different grades of hard red spring wheat, containing varying percentages of inseparable foreign matter:
The milling tests made by the chemist of the Minnesota State inspection department are made with a small experimental mill having two sets of rolls,

and the results obtained in the report in connection with wheat containing varying percentages of corn cockle, king-head, and hairy-vetch. These results are closely correlated with the manner of distribution of the impurities in the wheat and the nature of the impurities and this fact should be borne in mind in making comparisons of the experimental tests.

Some of the results obtained by the report in connection with wheat containing varying percentages of corn cockle are in line with extensive experiments similar to those now made by the United States Department of Agriculture. For instance, the results obtained in the milling and baking tests with sample T-B and N-11774 with wheat which contained 24 per cent of inseparable foreign material most of which was corn cockle, are in line with the report of the chemist, and are in line with the results obtained by the United States Department of Agriculture tests with samples of wheat containing varying per cents of corn cockle.

The accompanying table sets forth the effects on the milling and baking qualities of flour made from wheat containing varying percentages of corn cockle, and also the results of tests of similar character with other injurious impurities. These tests were made with a 50-barrel mill and each sample consisted of 100 pounds, therefore the flour yields obtained are comparable with those of commercial mills of a capacity of from 50 to 100 barrels. These data represent the averages of three years' tests.

Not only is it important from the miller's standpoint that a high percentage of flour be obtained, but also flour of high quality, and any impurities which reduce the yield of flour and at the same time lower its quality have a direct bearing on the milling value and should be considered as an important factor in the inspection and grading of wheat. The presence of corn cockle in wheat does not reduce the flour yield to such an extent as does king-head. However, an increase in the amount of either of these impurities has a noticeably deleterious effect upon both the color and texture of the bread baked from flour containing these impurities. Corn cockle is an especially objectionable impurity in that it materially reduces the loaf volume. This also is true where vetch is present in wheat in appreciable quantity, 1 per cent or more being especially injurious.

Baking tests with wheat flour mixed with different percentages of flour made from corn cockle, king-head, and hairy-vetch.

Sample description (flour blends).	Water absorption.	Score.		Remarks concerning crumb.
		Texture of loaf.	Color of crumb.	
	Per cent.			
Wheat flour (check test).....	92.2	88	85	Creamy.
Wheat flour with rye flour:				
0.5 per cent.....	92.2	88	82	Creamy gray.
0.75 per cent.....	92.2	88	82	Do.
1.0 per cent.....	92.2	88	82	Do.
1.5 per cent.....	91.1	88	82	Do.
Wheat flour (check test).....	91.0	88	85	Creamy.
Wheat flour with corn-cockle flour:				
0.5 per cent.....	91.0	88	85	Creamy gray.
0.75 per cent.....	91.0	88	82	Do.
1.0 per cent.....	91.0	88	82	Do.
1.5 per cent.....	91.0	88	82	Do.
Wheat flour (check test).....	91.0	88	85	Creamy.
Wheat flour with king-head flour:				
0.5 per cent.....	91.0	88	85	Dirty gray.
0.75 per cent.....	91.0	88	82	Do.
1.0 per cent.....	91.0	88	82	Very dirty gray.
1.5 per cent.....	91.0	88	82	Do.
Wheat flour (check test).....	91.0	88	85	Creamy.
Wheat flour with hairy-vetch flour:				
0.5 per cent.....	91.4	81	82	Creamy yellow.
0.75 per cent.....	91.0	82	81	Yellow.
1.0 per cent.....	91.0	82	82	Do.
1.5 per cent.....	91.0	82	82	Do.

Milling and baking tests of clean wheat and of wheat containing different percentages of rye, corn cockle, kinghead, and hairy vetch.

Sample description.	Flour.	Water absorption.	Volume of loaf.	Score.		Remarks concerning crumb.
				Texture of loaf.	Color of crumb.	
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Cubic centimeter.</i>			
Clean wheat (check test)....	71.4	58.0	2,510	94	96	Creamy.
Wheat with rye:						
1 per cent.....	70.0	57.3	2,410	94	95	Do.
2 per cent.....	71.2	57.4	2,430	93	94	Creamy gray.
3 per cent.....	70.7	57.3	2,440	91	93	Slightly gray.
5 per cent.....	70.0	57.3	2,440	90	92	Gray.
10 per cent.....	70.0	57.9	2,370	90	92	Do.
Clean wheat (check test)....	71.8	58.2	2,565	94	97	Creamy.
Wheat with corn cockle:						
1 per cent.....	70.0	58.1	2,500	93	95	Creamy gray.
2 per cent.....	69.7	57.4	2,470	90	90	Gray.
3 per cent.....	70.4	57.7	2,220	86	87	Very gray.
Clean wheat (check test)....	70.3	62.3	2,765	95	96	Creamy.
Wheat with corn cockle:						
5 per cent.....	70.1	60.9	1,750	80	82	Very gray.
10 per cent.....	69.3	59.4	910	50	70	Do.
Clean wheat (check test)....	71.4	58.0	2,510	94	96	Creamy.
Wheat with kinghead:						
1 per cent.....	70.2	57.8	2,445	93	88	Very gray.
2 per cent.....	69.4	57.8	2,450	92	83	Do.
3 per cent.....	67.6	57.9	2,400	89	79	Do.
5 per cent.....	63.3	57.9	2,350	86	70	Dirty gray.
10 per cent.....	61.5	57.8	2,240	80	50	Do.
Clean wheat (check test)....	71.3	58.0	2,450	95	96	Creamy.
Wheat with hairy vetch:						
1 per cent.....	69.7	57.9	2,115	88	92	Do.
2 per cent.....	71.2	57.8	2,015	83	90	Yellow.
3 per cent.....	71.2	58.2	1,940	78	85	Do.
5 per cent.....	70.7	58.8	1,835	69	79	Very yellow.
10 per cent.....	70.2	56.3	1,605	63	68	Do.

Tests were made of blends of wheat flour and definitely known percentages of flour from rye, corn cockle, kinghead, and vetch seed for the additional study of the effects of these impurities on the baking qualities. The flour used in these tests was obtained in milling each of the above-mentioned ingredients in its pure state. The results of the baking tests with the different blends of wheat flour, and with each of the impurities, are given in the accompanying tabulation.

A blend of 0.5 per cent was in every instance injurious, the detrimental effects being more apparent on the color of the bread, and with but 1.5 per cent blends, the deleterious effects in color and texture of the bread are especially noticeable. Blends of rye and corn cockle flour give a grayish tinge to the crumb, while the addition of kinghead flour results in a loaf with a dirty, gray-colored crumb. Blends with vetch flour give to the bread a yellowish color, and a strong and disagreeable odor characteristic of vetch.

Mr. ANDERSON. There is one thing I would like to say along the line of Mr. Young's remarks. He has made the statement, I think, that there is an unfortunate sentiment in the grain-growing section in the Northwest for the repeal of this law. Personally, I think the advantages of uniformity probably far outweigh the disadvantages that would exist under it under normal times, because it is a situation which we have to meet if you do not, and one that is very difficult for us to meet.

The CHAIRMAN. Mr. Brand, on account of the world condition in reference to grain, this law has gone into effect at a rather inopportune time for results that would show whether the law is good or bad. Is that true or not?

Mr. BRAND. That is very true. It has not had the opportunity to operate under the conditions that will apply normally, and, as a con-

sequence of the inelasticity of fixed prices, there have been a number of injustices that have been charged to the operation of the grades, whereas they were really to be charged to the fixity of the prices.

The CHAIRMAN. In other words, the law of supply and demand in the whole grain-trading business has practically been suspended for the past eight or nine months?

Mr. BRAND. There is a great deal of truth in that, Mr. Chairman. On the other hand, Mr. Chairman, if we had not had uniform grades, gentlemen in the Food Administration Grain Corporation tell me that they do not know what we would have done. They say that if we had not had the uniform grades they do not know how they would have handled the fixed prices at all.

The CHAIRMAN. In other words, I feel, and I think you feel, that the law has not been fairly tested out?

Mr. YOUNG. I think we all agree on that.

The CHAIRMAN. And it seems to me that the farmer, who is a very intelligent man, after all, will sooner or later see that fact and be willing that this law be tested out. I am very glad to hear you say, however, that you are trying to find out the attitude of the grain trade with reference to the standards that you have issued, that you have an open mind on the proposition, that you are willing to correct your mistakes if you have made any, and that you are willing to go further in protecting the public if you have not gone as far as you ought to.

Mr. BRAND. Mr. Chairman, we are trying to serve the people and not ourselves.

Mr. RUBEY. I want to ask two or three questions. The talk we have had to-day has applied almost entirely to the grain situation in the Northwest. Now, what is the situation in the other parts of the country? In other words, have you received complaints from Kansas City, Omaha, and other cities around there to the same extent that you have from St. Paul and Minneapolis?

Mr. BRAND. We have had two general territories that have complained rather sharply. One is the Northwest, and the greater part of the complaint has been on moisture. The other is the Southwest, particularly Kansas. There the greatest complaint has been on dockage. We found in the course of our hearings that a large part of the complaint in the Southwest regarding dockage was due to a misapplication of the dockage principle. We found in many cases—I suppose in some of them it was purposeful—that not only was the dockage being deducted, but the wheat was also graded down because of the presence of the dockage, thus taking it away from the farmer twice. We found a great many of those things, and just as soon as we could point these out so the farmers could see these things clearly the trouble would disappear. Because of the present emergency we have not been able to carry the work back to the farmer as much as we would like. We must carry the work back to the elevator men and farmers, and hold institutes so as to get these facts out and to get the farmer's point of view more intimately than now.

Mr. ANDERSON. Have pamphlets been sent to the elevator men?

Mr. BRAND. Every elevator man gets every one of these pamphlets. I am told that Congressman Gould attended a meeting at Seneca Falls, N. Y. When he asked "Why do not these men know about that?"

Mr. Kennedy, the grain-zone agent at Buffalo, said, "I was talking with one of them and he said that he threw them all in the waste-basket." We have them all on our mailing list.

Mr. RUBEY. The complaints that come from the central West on account of dockage come more from the producers than anyone else, do they not?

Mr. BRAND. The specific complaints which have been most insistent, particularly from Kansas, come from a small group of producers or, at least, men who are very close to the producers.

Mr. RUBEY. What have you done by way of popularizing this act with the farmer himself, giving him instructions as to how to prepare wheat for market and keep it on the farm?

Mr. BRAND. Gov. Rubey, we have done almost nothing along that line, and we are open to criticism that we have not done that, but we have not been able to do everything the first year.

Mr. RUBEY. It is your intention to get to that as soon as possible?

Mr. BRAND. We have had a difficulty there and we have suggested a slight change in the law. We have no right to pass upon the use of our standards except in interstate transactions. The farmer usually deals with a country elevator or with a central market in his own State. As the act applies only to interstate shipments, we have just got to say to him, "We are sorry. If you are not satisfied with the grading you get locally you will have to take it up with your State authorities." That is all right in the States where they have inspection departments, but many States do not have inspection departments. That will never be really settled until some way is found to induce all the local elevators to put in separating machinery at the country elevators.

Mr. YOUNG of North Dakota. And of such capacity that he can separate that dockage while the farmer is there waiting and let him take it home. Those could be installed without very much cost.

Mr. BRAND. That would be the ideal, surely, to give the individual back his skim milk, just as the creamery does after the separation.

Mr. YOUNG of North Dakota. One other thing I want to ask you. For instance, in my district, if I were willing to send out to every farmer a circular telling all about these grades, popularizing it as much as possible, avoiding this scientific or technical way of describing it so that only a miller or elevator man would understand it, but popularizing it so that the farmer could understand just how his wheat is going to be graded; if I were willing to send out such a circular as that and some of these other Congressmen living in districts made up mostly of farmers were ready to do the same, don't you think the department could prepare a popular circular of that kind?

Mr. BRAND. Yes; I do.

Mr. YOUNG of North Dakota. That would help to educate the farmers themselves as to how their grading is done. Now, ordinarily, you can get a better grading at the local elevator if the man who hauls in the wheat knows something about how it ought to be graded, as well as the fellow who actually does it; and the way trouble has occurred—and there has been a whole lot of it this year—has been that the local buyers at the local elevators have known something about these new grades, and the fellows who hauled in the wheat, because they have been too busy or have not had printed

copies of the new standard grades which they could study, did not know anything about them, thus offering a great opportunity to the buyers to take advantage of them. Now, if some such plan as I have suggested of preparing a circular—not in technical language that only men versed in the grain trade would understand, but popularized so that any man who had time to read it would understand—and if sufficient copies were provided so that every man could have it, I think it would do a whole lot of good.

Mr. BRAND. I am sure.

Mr. RUBEY. There has been a tendency to make the law unpopular by the action of the grain-elevator men themselves. When the farmer brings in his wheat and doesn't get just what he thinks he ought to have, the elevator man says it is on account of this grain-grading act. The blame is put on the law, and the farmer doesn't know anything about it and goes back home dissatisfied. I have seen letters from farmers in many of the journals complaining of the law; but if he had known all about it and had stood up for his rights he would have got what he should have had.

Mr. BRAND. We have had reports where they have actually arbitrarily deducted 2 pounds for dockage and told the farmers that the act compelled it, and if they had had circulars they would have known better.

Mr. YOUNG of North Dakota. Is your present appropriation sufficient so that you could furnish enough circulars to reach all the wheat raisers?

Mr. JACOWAY. They won't read them if we send them.

Mr. YOUNG of North Dakota. I think in my district, if I sent out a circular, especially with a letter, and say, "If you will read this, you won't have any trouble about selling your wheat," I think they would read that.

Mr. BRAND. That, of course, would come out of the printing fund of the department, and Mr. Harrison would be better able to say as to that.

Mr. HAUGEN. Couldn't this information be disseminated through the county agents?

Mr. BRAND. We do disseminate it through them, and we shall do more of it, and we shall also do more through our State field agents in marketing.

Mr. HAUGEN. Then, they ought to have some knowledge of this standardization act.

Mr. BRAND. Generally speaking, the county agent hasn't had an opportunity to learn enough about this grading so that he could teach anything about it.

Mr. HAUGEN. Is there much to learn in order to give them the knowledge of how to dispose of their wheat to the best advantage?

Mr. BRAND. I do not think it is difficult to learn. We have been told that any competent grain man in an hour can sufficiently familiarize himself with those grades that apply to his territory if he applies himself with reasonable persistence. There are lots of grades, but only a few apply to one territory. They must provide themselves with moisture testers, but the men who opposed them at first are doing that more and more, and the man who opposes the tester most at first is the man who is getting most out of it, and he says he would not be without it for the world.

Mr. HAUGEN. You spoke of the abuses of the dockage system. It doesn't require special knowledge to tell him about that.

Mr. BRAND. That dockage has a value. I am not sure which feature you have in mind. At the present time they may deliver the equivalent of a carload of wheat, and 100 or 200 bushels of it may have no value. It happened that a man delivered \$400 worth of corn in a car of wheat, but he didn't get a penny for his corn.

Mr. JACOWAY. The man who has wheat to sell generally doesn't know what grade of wheat he has to sell, but the man who buys it does. It is just the same as in the cotton business; the average man who produces cotton in the South doesn't know the grade, but the man who buys it does know.

Mr. BRAND. The principle is exactly the same, and, on the whole, the grain man has learned more, because, in a sense, it is less technical.

Mr. HAUGEN. To make any grade, you take into consideration moisture?

Mr. BRAND. Yes.

Mr. HAUGEN. To what extent? How much moisture do you permit?

Mr. BRAND. It varies with the different kinds of wheat.

Mr. HAUGEN. Moisture has no value whatever in wheat?

Mr. BRAND. No; it has not.

Mr. HAUGEN. Flour can not be made out of moisture?

Mr. BRAND. No; it can not.

Mr. HAUGEN. And the only value it has is to add to the cost of the wheat?

Mr. BRAND. That is true.

Mr. HAUGEN. And it is of no value after it is mixed with the wheat. I understood you to say a moment ago that the samples determined the price of grain. That is in competitive bidding?

Mr. BRAND. Yes; the actual examination of the sample on the table—the pan sample.

Mr. HAUGEN. Well, then, what use is the standardization act?

Mr. BRAND. Only a small part of the grain is dealt with on sample. The great bulk of the grain is dealt with by grade.

Mr. HAUGEN. I understood you to say that when you return to competitive bidding the samples determine it.

Mr. BRAND. The grain would be paid for on its merits rather than by the grade itself.

Mr. HAUGEN. How much difference is there in the price of wheat of the different grades?

Mr. BRAND. At the present time?

Mr. HAUGEN. Yes.

Mr. BRAND. There is a 4-cent premium for No. 1 dark hard spring and hard red winter, and there is a 3-cent reduction for each grade under No. 1. At the present time there is a regulation in effect whereby the actual value of the grain may be taken into account and be paid for within 1 cent of the next grade above for all grades up to three, inclusive.

Mr. HAUGEN. The difference in price is paid by the President or the commission?

Mr. BRAND. It is fixed by the fair-price committee. It was fixed for Government purchases and is not a fixed price in the legal sense of the word.

Mr. HAUGEN. It is a fixed price inasmuch as they conform to the regulations made by the Food Commission, I think.

Mr. BRAND. Well, I should say as a legal matter it has not been fixed. As a practical matter the Grain Corporation buys practically all the grain, and its price prevails. I should say that is a fair statement.

Mr. HAUGEN. How do the fixed prices compare with the former prices?

Mr. BRAND. There was a pronounced reduction, of course, in price when the fair-price committee acted. As to the difference in price, I should say that since the new buying rules were put in early in December, which permit variations in the prices, and which take into account the particular factor which causes the reduction in grade, the difference would be about what it would be under a competitive market, generally speaking. The elasticity which has been put in by the new rules enables the grain-zone agent to recognize the value of the rye, if it has 5 per cent rye, and the miller would just as soon use it; in which case they may sell it up to within 1 cent of the next higher grade.

Mr. YOUNG of North Dakota. No. 1 is a premium grade?

Mr. BRAND. Yes; No. 1, dark northern spring and No. 1 dark hard winter.

Mr. YOUNG of North Dakota. No. 2 is the contract grade?

Mr. BRAND. Yes; No. 2 northern spring.

Mr. YOUNG of North Dakota. And under the instructions from the Grain Corporation they can buy up within 1 cent of No. 2, the contract grade?

Mr. BRAND. Yes; to be exact, the following are the new rules which became effective December 3: No. 2 wheat, 3 cents less than No. 1; No. 3, according to quality, not higher than 4 cents under No. 1; No. 4, according to quality, not higher than 5 cents under No. 1; No. 5, according to quality, not higher than 6 cents under No. 1.

The CHAIRMAN. Anything further on this item, gentlemen?

Mr. RUBEY. I believe that this law is for the benefit of the American farmer, and I think you ought to get to the point just as soon as you can where you can reach him, giving him definite and complete information as to the law and the benefits that will accrue to him if he will prepare his wheat and take it to the market in the best possible shape.

Mr. BRAND. We certainly accept that suggestion and will do our very best to get that information to him.

The CHAIRMAN. Anything further, gentlemen?

Mr. ANDERSON. I should like to say, in order that I may not be misunderstood, that nothing I have said to-day ought to be construed as indicating any desire on my part to repeal this law.

Mr. BRAND. I haven't felt so, certainly.

Mr. HAUGEN. I want to be understood that nothing I have said reflects on any Member of Congress or anything of the kind. I certainly have nothing of that kind in mind.

The CHAIRMAN. Take up the next item, 69, the enforcement of the standard for Climax baskets for grapes, \$5,000, with an increase of \$1,000. Your note says that you will need that amount to enforce this law.

Mr. BRAND. The act as passed by Congress provided that it should go into effect on the 1st of November, fully a year later than its passage. Therefore, we are operating for only a fraction of a year. In order to cover the whole year we are asking for an additional thousand dollars. It is designed to standardize the manufacture of Climax baskets, and we are called upon to test large numbers of these baskets.

The CHAIRMAN. Anything on that item, gentlemen?

Then take your next item, Doctor, for general administrative expenses. There seems to be an increase there.

Mr. BRAND. About \$6,000.

The CHAIRMAN. An actual increase of \$6,985. I assume that this is made necessary by the other increases?

Mr. BRAND. It is necessary to carry on the enlarged work. It is really less in proportion than the increase in other respects and is needed to take care of administrative expenses which could scarcely be properly charged to the various projects.

The CHAIRMAN. It seems to me that this item is in the wrong place in your estimates. Most of the items for administrative expenses in other bureaus are carried at the end.

Mr. BRAND. The particular reason for not carrying it elsewhere in this section of the bill is that the administrative expense of the cotton-futures act, the grain-standards act, and the warehouse act are all paid from the appropriation for those acts, which follow.

Mr. HAUGEN. I would like to ask a question about the salaries: How do the salaries paid by you compare with the salaries paid by the boards of trade of the States?

Mr. BRAND. I want to tell you frankly that we are distinctly short-handed. It has now come about that the State organizations, both law-enforcing, educational, and experimental, are paying somewhat more than the Department of Agriculture is paying, with the result that we are losing a great many men, and we are unable to attract to our service many of those we have tried to get.

Mr. RUBEY. You are not having that trouble in Missouri, are you?

Mr. BRAND. Yes; we have even had it in Missouri. Just as a concrete illustration, take the inspection department of the St. Louis board. We actually accomplished the appointment of a gentleman from there at \$3,000 and they raised him to \$6,000 and held him.

Mr. HAUGEN. A short time ago I was shown a list of salaries paid and compared with the salaries paid by your office, and according to that list you are paying them two dollars for one.

Mr. BRAND. We are not paying a penny more than we can help.

Mr. HAUGEN. Isn't it a fact that you picked up \$1,500 men and put them in at \$3,000?

Mr. BRAND. No; absolutely not. We take into account the salary they are getting in their present employment. No matter whether it is in another institution or in private occupation, and we decline—and even if we didn't the Secretary would—to make any gross increases in salary.

Mr. HAUGEN. I concede that you should have high-class men, but if the increases in salary are anything like what were suggested to me or represented to me, it seems to me it is too large an increase.

Mr. BRAND. Yesterday a man came to me and said that his most important assistant was offered \$5,000 a year; we are paying him \$2,400.

Mr. HAUGEN. Why didn't he accept that?

Mr. BRAND. Because he was interested in his work.

Mr. HAUGEN. How long has he been with you?

Mr. BRAND. Three years.

Mr. HARRISON. It must be borne in mind that the grain supervisors are compelled to move to other cities.

Mr. HAUGEN. In many instances they might do that to their own advantage.

Mr. HARRISON. Nevertheless, it is a great expense and it is difficult to get them to move to another place at the same salary they are receiving.

Mr. HAUGEN. We have many men employed by the Government moving from place to place receiving \$1,000 or less a year.

Mr. BRAND. We have been paying about \$2,100, until within a few weeks, to our supervisor at Cincinnati. Recently he was offered \$3,500, but he decided to stay with us at a slight increase, perhaps one-fifth of what he could have gotten outside. Men are interested in this work. They think it has possibilities and that it is doing good to the country. This is the kind of thing that enables men to work all night, if necessary, and in shifts.

Mr. RUBEY. Do they get anything extra?

Mr. BRAND. Not a penny. Many of our men and women have not had over a week's vacation during the past year.

The CHAIRMAN. Anything further, gentlemen? If not, take up item 71, the enforcement of the cotton-futures act, where there seems to be a decrease.

Mr. BRAND. The decrease is apparent, not real.

The CHAIRMAN. The appropriation is the same?

Mr. BRAND. The appropriation is the same.

The CHAIRMAN. Have you any statement about that?

Mr. BRAND. I do wish to make a statement because of changed conditions since these estimates were prepared. Cotton has gone up steadily from that date until now it is worth from 5 cents to 6 cents a pound more than it was when the estimates were prepared. In the preparation of the official standards of the United States we are compelled, as a matter of fact, to buy large quantities of cotton in order to find that which is suitable for the preparation of the standards. The way matters stand now, if we are to receive the identical figure for the ensuing year that we have had it will amount to an actual reduction in our working fund of nearly \$25,000, or perhaps about \$26,000.

The CHAIRMAN. How do you make that?

Mr. BRAND. Because of the increased price of cotton. And I want to say in respect to that matter that we can not use all of the cotton in a bale. We can use only those portions of it that are suitable for the manufacture of standards, but we sell all the rest of the cotton. We have been fortunate in our cotton sales and have made a profit and returned to the Treasury several thousands of dollars because of the increase in price. I would ask very urgently, Mr. Chairman, that the committee increase this amount, and, if I may, I would like

to submit a definite figure, and we will try to make it just as low as we can to cover this matter.

Mr. LEE. Can you get an additional price for your samples?

Mr. BRAND. When we get it, it does not affect the trade, Mr. Lee. They are willing to pay almost any price, but we are anxious to get these standards back to the country, and it does make quite a difference there.

The CHAIRMAN. How many bales, Doctor, do you use in the year?

Mr. BRAND. I should say that we go through 500 or 600 bales. That is, we open them and use them in part. We examine 30,000 or 40,000 bales in the field in order to find that small number, and a bale of cotton now is worth, as you know, about \$150, and it runs right up into money.

The CHAIRMAN. I mean, how many bales of cotton do you actually have to buy to make your investigation?

Mr. BRAND. We carry a stock in order that we may select from about 600 bales. You see we have 12 positions in each box and 9 boxes in the straight grades, and then we have 11 boxes in the color standards and 12 samples for each of the different sets; and we have to carry considerable excess over that because we are constantly running out. We will often get a bale from which only 60 to 100 pounds can be used. Then we have to discard it for standardization purposes.

The CHAIRMAN. To get these 600 bales that you actually use, how many bales do you have to buy in the open market?

Mr. BRAND. I am unable to say offhand how many bales. We would probably have to buy five or six on an average for every position.

The CHAIRMAN. That would be 6,000 or 7,000 bales?

Mr. BRAND. No; we don't buy that many. As soon as you multiply I see that that is excessive. I should say not more than 1,500. I will see that the figures are put in in understandable fashion. We try to minimize the number of bales that we have actually to use.

NOTE.—The actual figures are 1,000 bales. Bales purchased from July 1, 1916, to July 1, 1917, 421; bales partly used and sold, July 1, 1916, to July 1, 1917, 498. Average stock on hand, about 500 bales.

The CHAIRMAN. The general work of the enforcement of this act has gone along in the usual way?

Mr. BRAND. It has. We had a larger number of disputes under the futures last year than the previous year. But for some reason in the last month we had about a third of the total of the previous year. It depends on market conditions.

Mr. LEE. On account of the high price?

Mr. BRAND. We had 157 last year, as I recall it, but in the month of December, 1917, we had 63 in the single month.

The CHAIRMAN. That was due to increased speculation and high prices?

Mr. BRAND. Slightly increased speculation and a general uncertainty in the market, and a change in the relation of the future quotations to the spot quotations.

Mr. JACOWAY. That is one feature of this bill in which I am very much interested. I am not going to ask you to go into detail at present as to what you have done under this provision, but I am going to ask the general question, Do you think the law has borne the fruit that you thought it would bear?

Mr. BRAND. Yes; I think it has.

Mr. JACOWAY. Has it been of actual value to produce a good grade of cotton or not?

Mr. BRAND. We believe it has. It has fixed the price of middling cotton on the basis of a good average run of cotton, and that price has been reflected back to the country instead of being based on rag tails, as in previous years.

The CHAIRMAN. As a matter of fact when this act went into effect, when the two standards, the old and the new, were being operated, your standard sold from \$2 to \$5 higher than the old standard at a time when the price of cotton was 10 to 12 cents a pound?

Mr. BRAND. Or a little bit lower.

The CHAIRMAN. That ought to be adding to the price of cotton \$6 or \$8 a bale.

Mr. BRAND. The difference would represent very close to that.

Mr. JACOWAY. Is it a fact that when futures and spot cotton are more nearly together the benefit goes to the producer of cotton as a rule?

Mr. BRAND. The parity of futures and spots, everything else being equal, will depend upon transportation, storage, handling, and interest charges.

Mr. JACOWAY. To supplement the question asked by the chairman, I examined that record myself, and I thought during this period of time to which he made reference that spots and futures were more nearly together than ever before in the history of the country.

Mr. BRAND. They have been extremely so from the time that the cotton-futures act has been on the books. There has been only one time that they have not, and that was on account of the war, and with reference to transportation.

The CHAIRMAN. The whole logic of the cotton-futures act is to bring spots and futures together?

Mr. BRAND. To bring them into a proper parity.

The CHAIRMAN. Anything else? Take up the next item, 72, where you have new language as follows:

That section 6 of said act is hereby amended, effective on and after the passage of this act, by striking out of the first sentence the words "sold, offered for sale, or consigned for sale, or which has been shipped, or delivered for shipment in interstate or foreign commerce shall have been inspected," and substituting therefor the words "shall have been inspected by an inspector licensed under this act"; and by striking out of the last sentence the words "made after the parties in interest have had opportunity to be heard."

First of all let us take up the matter of the increase of the appropriation. Is there an increase or not?

Mr. BRAND. There is not.

The CHAIRMAN. Suppose you explain to the committee just what you intend to do under this new language.

Mr. BRAND. We have covered that in part, but I will review the situation. We now have about 754 licenses outstanding scattered all over the country. In some of the markets they have appeal facilities so that a grower can obtain satisfaction or a country shipper can obtain satisfaction if he feels that the grading has been incorrect. But there are now many licensed inspectors operating at individual points in States where they do not have inspection systems, particu-

larly where there is no opportunity to appeal, where they apply our standards, and, because of the fact that we have no jurisdiction, the aggrieved party has absolutely no recourse. If this change is made and one of our inspectors, licensed under the act, makes an inspection, we can then go in and determine whether he has applied the standards correctly or not. That is the purpose of the first of those amendments—to give us an opportunity to exercise a degree of supervision over those inspections that we can not exercise under existing conditions, particularly in those territories.

Mr. RUBEN. Under the law as it is now, before you can take an appeal it must be grain that is in interstate commerce?

Mr. BRAND. Absolutely. We decline to hear the complaints otherwise, and we have had lots of complaints on that account; quite a volume of complaint has been coming to us because we have declined to go beyond our jurisdiction in that matter. I may say that on this particular point people of the country generally have asked that both of these changes be made. The suggestion has come rather from the outside than from the department.

The CHAIRMAN. What is the other change involved?

Mr. BRAND. The second change involves this. At the present time every party interested has the right to be heard. Sometimes it has required as much as two weeks before findings could be issued, because of the time it took to reach interested parties. The question is one of fact. It is not one of opinion at all. It is a question of what is the grade of this grain, if you have applied the test that must be applied under the standard. Therefore we have suggested that the red tape of giving notices be dispensed with and that we examine the grain and give the findings.

Mr. ANDERSON. In the Northwest it has been said that the provision requiring notice was unnecessary and that it was making it inoperative.

Mr. BRAND. It has slowed things up and perhaps has decreased the amount of appealing. We are not trying to encourage appealing. We want persons who have a right of appeal to do so, but this imposes a restriction that does not help any.

Mr. RUBEN. When an appeal has been made, the sooner it is decided the better.

Mr. BRAND. It facilitates the movement of cars. The grain organizations ask that this item be put in.

Mr. JACOWAY. I think it is important.

Mr. ANDERSON. I should like to ask a question upon the other proposition. As I understand it, the striking out of the language which it is proposed to strike out and the insertion of the other language would have the effect of giving you the right to determine an appeal in the case of grain that had not moved in interstate commerce at all?

Mr. BRAND. It would if it was inspected by one of our licensed inspectors.

Mr. ANDERSON. I think there is some doubt as to whether, without laying more foundation than is laid here, there is any basis for such an appeal. The mere fact that the grain is inspected by licensed inspectors, it seems to me, would not give you jurisdiction upon appeal of a case of intrastate grain.

Mr. BRAND. I am not sure as to the legal point that is involved. As a practical matter, I am quite sure it would not be brought into question; but as a legal proposition I am not prepared to say. I say that because of the very general requests that we have had for the change of language.

Mr. ANDERSON. I have introduced a bill that I think would give that foundation. I do not want to encumber the record particularly, but it has always been my view about this thing that it was not necessary to confine this act to interstate and foreign commerce at all. We have the right to fix a standard, and we have the right to see that that standard is properly applied.

The CHAIRMAN. And to protect it.

Mr. ANDERSON. And to provide machinery for protecting it.

Mr. BRAND. That is what this really involves.

Mr. ANDERSON. I agree with you that that is what this involves. The only question in my mind is whether you have laid a foundation which would give you the jurisdiction of an intrastate shipment on appeal. Of course, if you had the right, the absolute right, to inspect the grain in the first place in intrastate shipments, which you have not legally but which you do have practically, you would have a foundation for the appeal. But in the absence of the legal right to appeal on inspections and intrastate shipments, it seems to me a very grave question whether you would get that right on appeal by this provision.

Mr. BRAND. The practical problem is just this: We license an inspector to apply the official grain standards of the United States. He signs his certificate as an inspector licensed under the act. If there is an appeal and the transaction is an intrastate transaction, he can do all the violence he pleases to the standards, and there is no way by which we can reach him because there is no inspection department. In the States where there is an inspection department it is scarcely arising; but it does arise in all States where individual inspectors hold out to the public an inspection service at various smaller markets. They live on the fees; they are in a position where they can do as they please in any intrastate matter; and we haven't even power to protect and safeguard their application of our standard. We can not proceed against their license because of their wrong acts with respect to this particular matter.

Mr. ANDERSON. I understand the entire practicability of the proposition. That is not brought into question. But aside from the question of practicability of an appeal and the necessity for meeting a situation which has been outlined, it does seem to me that there is some question as to whether you can acquire jurisdiction upon appeal without laying more foundation than is laid by this provision, if the legal question is brought to a test.

Mr. BRAND. We want to be able, Mr. Chairman, to deal with an inspector who abuses and misuses the standard which we have established and which we have licensed him to apply even though the particular transaction in which he is applying it in this case is not an interstate transaction.

Mr. ANDERSON. In my judgment that can be done, but I do not think it can be done in this way.

Mr. JACOWAY. The Federal Government's dealing with the States in this matter is under a contractual relation, isn't it?

Mr. BRAND. Not in this particular matter; no. Where we operate in our legal sphere, and the States operate in their sphere, it so happens that the States in all cases have adopted our standard.

Mr. JACOWAY. But, after all, it is a contractual relation—what they can do and what you can do.

Mr. BRAND. No; it is a matter of law.

Mr. JACOWAY. That is what I am getting at—that where the Federal Government enters into a contractual relation with a State in the enforcement of any law passed by Congress, that gives jurisdiction to the Federal Government to enforce it. The establishment of game preserves is a case in point.

Mr. BRAND. In these particular matters there isn't any State authority with which we could contract, because there is no inspection department.

Mr. RUBEX. Suppose you had some inspector appointed in a place where there is no State inspection. Some man comes along with grain that has been inspected by an inspector and he is not satisfied. Why can't he appeal to you on the ground that the inspector has not performed his duty? Can you say whether he has not?

Mr. BRAND. We haven't that jurisdiction. It is regrettable to say that we can not in that way protect our standard, even when incorrect or dishonest grading has been done by a man that we have licensed.

Mr. ANDERSON. You can take away his license.

Mr. BRAND. No; it is outside of our jurisdiction. We might, just perforce, do it, but his act is one that has not been consummated in connection with his duties as a licensed inspector.

Mr. HAUGEN. Your jurisdiction is limited to interstate commerce?

Mr. BRAND. And now we are just trying by this means—I notice what Mr. Anderson has said—as a practical matter it would help us out very greatly. Here it is compulsory, because we are operating in the only field in which the Federal Government can operate.

Mr. RUBEX. This act is founded on the idea of interstate commerce.

The CHAIRMAN. Let me ask you this: Admitting the advisability of this proposition, could an amendment be drawn—it would be subject to a point of order, of course—in which the basis could be laid for this situation?

Mr. ANDERSON. I think so. I think some men would probably disagree with me about that, but my own judgment is that it can be done, and I have examined the question some.

The CHAIRMAN. You would be injecting into the interstate proposition a question of standard, and you would have a double-barreled authority in the same act.

Mr. ANDERSON. The real thought about this is, that the right of the Federal Government to fix a standard does not depend on interstate commerce. The very purpose in fixing the standard was to give uniformity without respect to State laws. But when you fix a standard under the power of the Federal Government to fix the standard, you have a right to make provision for the protection of the standard and you have a right to provide that nobody shall throw open any other or different standard, just as you have a right

to say that no one shall use any money except the standard money fixed by the General Government.

The CHAIRMAN. I think you are absolutely right about that proposition. The proposition is so simple that even a lawyer can not dispute it.

Is there anything further on this item? We have covered the general proposition pretty well. If not, I would like to have the lawyers of this committee look into this new language proposition and see what they can work out.

The next item is 73, for the enforcement of the warehouse act, where there is an apparent decrease of \$6,080, but no actual change in the amount. Just what progress have you made with that subject, Doctor?

Mr. BRAND. Mr. Chairman, I owe the committee an explanation regarding the warehouse act. The cotton-futures act was a reenactment of the old cotton-futures act. We had to put into effect new rules and regulations under that act in order that the transition from the old law to the new might be smooth and not disturb the market. We did that, and did it promptly. The grain-standards act and the warehouse act were passed at the same time as the reenacted cotton-futures act was passed. The grain-standards act was a compulsory law. Therefore we proceeded immediately to devote our greatest attention to that law, and we put it into effect very promptly. It was passed August 11, and on the 1st of September the corn standards were promulgated. We proceeded promptly with every step under that law, and in the meantime war was declared and we were engaged, as this committee knows, in assisting in the drafting of the food-control law. Therefore we did not press, at that time, as hard as we could have, except for the intervention of other matters, the putting into effect of the warehouse law. Then the food-inspection authority was given, and that seemed to be so thoroughly an emergency matter with reference to increasing production that that, too, was given priority over the warehouse act. The standard-container act was passed and had to be put into effect by its own terms upon the 1st of November. So we had no choice except to be ready. Consequently, it was only about two months ago that the tentative rules and regulations for the warehouse act were announced. We have now in the hands of the printer final rules and regulations for putting the warehouse act into effect, and we believe that in the course of the next two months we will be able to begin the licensing of cotton warehouses.

Mr. HAUGEN. How many licenses have been issued?

Mr. BRAND. None.

Mr. HAUGEN. Is that all that has been done?

Mr. BRAND. That represents a lot; it represents a huge piece of work. We had two or three big and difficult problems. The first related to the classification of warehouses, whether we should propose construction requirements or whether we should accept the insurance companies' classification; and then respecting the bonding companies, because the law compels the giving of bonds of surety companies. Personal bonds are not accepted. It gives the bonding companies a certain advantage in dealing with us that should be cured.

Mr. JACOWAY. How can it be cured?

Mr. BRAND. By slight amendment to the law.

Mr. JACOWAY. I think the warehouse act is one of the best things the committee has done, and if it needs correcting I wish you would indicate that.

Mr. BRAND. We will be glad to do that.

The third was the matter of insurance. It has been difficult to get the kind of policy that is required for dealing with this matter. The provisions of the law are such that the bonding companies claim that they have to protect themselves on account of the insurance. When we got it settled on one basis, they whirled around and set the rates high.

Mr. HAUGEN. How high is the rate?

Mr. BRAND. Two per cent annually.

Mr. HAUGEN. How does that compare with other bonds?

Mr. BRAND. Very much higher. There are States where lower rates prevail.

The CHAIRMAN. Have you worked that out so that you have got it to a reasonable level?

Mr. BRAND. We have got it to the level where we are willing to try it. We are convinced that it will be necessary for the best operation of this act to make some amendments. The former secretary of this committee, Mr. Murph, is my immediate assistant in dealing with this matter. I do not need to say that it is being well taken care of.

Mr. HAUGEN. You have got a good man; I will testify to that.

The CHAIRMAN. I should think, on account of the very high prices prevailing in cotton at least, that this act would not have a fair showing. People ordinarily do not warehouse except when prices are relatively low. I wonder if that idea is correct. Am I mistaken about it?

Mr. BRAND. Transportation conditions are such that even with a small crop they are forced to store very largely this year. That particular question has been raised, and in the course of our hearings they have asked it with a view to determining whether it would result in any disturbance, and the general statement was that instead of being disturbing it would be steadying. Some of the large warehouses indicate that they are coming in; and, interestingly enough, one of the great reasons is because of the provision with reference to standards. Particularly the cotton warehouses want to have the Government standards apply to their cotton so that they can borrow more nearly the actual value of the cotton.

Mr. JACOWAY. Under that law is not provision made that cotton stored 2 feet above the ground, and within an inclosure, and properly covered, shall in contemplation of that act be deemed in a Government warehouse?

Mr. BRAND. No; the provision reads that the Secretary of Agriculture shall determine what shall constitute a warehouse, and in the determination of that question he would take into consideration the different sections of the country and the different situations. In certain sections of the Southwest, where it practically never rains, a properly inclosed and guarded inclosure, even without roof, would be considered a warehouse; and we find that the trade agrees that what is a warehouse in one place is not in another.

Mr. JACOWAY. Unless your construction is liberal, it would be impossible for you to have cotton all under one roof.

Mr. BRAND. We have provided a classification of warehouses under which any warehouse can classify. If they can not classify under Class A, which is difficult to do, they may be able to classify under class B or class C.

The CHAIRMAN. Did I understand you to make the statement a moment ago that a good many warehouses were proposing to take out licenses in order to get the benefits of the standards provided by this act?

Mr. BRAND. Yes.

The CHAIRMAN. The statement was made before this committee by some one testifying some few weeks ago that the act did not amount to very much. I do not remember who it was or in what connection; and I am glad to hear you say that there is an interest in the public in this proposition, because I agree with Mr. Jacoway that it is a very fundamental piece of legislation.

One other proposition: Do you still think that there is a necessity and a demand for the passage of a cotton-standards act which has not before been shown?

Mr. BRAND. I do; and I think they are merely taking such features of the warehouse act as offer this opportunity to get grades which would be very general under a cotton-standards act.

The CHAIRMAN. Any further questions, gentlemen?

If not, Doctor, your next item is 74, where you make a slight change: "Hereafter, in the performance of the duties required of the Department of Agriculture, under the provisions of this act (the words 'this act' are stricken out and in lieu thereof is inserted the word 'acts') relating to the Bureau of Markets," etc.

Mr. BRAND. The purpose of that seems to be very clear. It was introduced to be permanent and it just fails slightly of being permanent. It is power that we want to use all the time. It is not a complete power, but persuasive. We find people more willing to divulge the facts that we require because of this slight addition to our powers.

Mr. ANDERSON. Of course this is only, as I understand it, intended to apply to administrative acts, like the cotton-futures act, the grain-standards act, and acts of that character.

Mr. BRAND. It was also intended to apply to such items as the one where we are working in cooperation with the Federal Trade Commission—investigational acts.

The CHAIRMAN. I was just wondering how many acts did touch the Bureau of Markets that you had in mind. You say "acts" not "act."

Mr. BRAND. The grain-standards act, the cotton-futures act, the warehouse act, the standard-container act, the food-products inspection act, the appropriation act itself, through its various items, and there may be others which I do not happen to think of.

The CHAIRMAN. In other words, the position of your bureau is that the words "this act" confines this power to carrying out the appropriation act and not these other acts.

Mr. BRAND. And restricts it to the particular year. If this amendment is put in, then next year this language could be dropped, and it would be permanent.

The CHAIRMAN. Any further questions? If not, we are much obliged to you, Dr. Brand.

(Thereupon, at 5.27 p. m., the committee adjourned until Thursday, January 10, 1918, at 10.30 a. m.)

SUMMARY AND PRINCIPAL ACTIVITIES OF BUREAU OF MARKETS.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
1. MARKETING AND DISTRIBUTING FARM PRODUCTS.....	\$289,400	\$292,240
(a) <i>Cooperative purchasing and marketing</i>	20,700	17,880
Object: Investigation of cooperative and semicooperative associations formed to market and distribute farm products and purchase farm supplies; and to discover the forms of organization and management best suited to their use.		
Results: Assistance has been given to many cooperative organizations, including the Fruit Growers Agency of the Pacific Northwest, the cotton growers in the Imperial Valley of California, and the Colorado Fruit Growers Auxiliary Committee. A proposed State cooperative law designed to conform to section 6 of the Clayton Act was drafted in cooperation with the Solicitor's office. A survey was made of cooperation in the United States and a card index compiled of over 10,000 cooperative organizations.		
(b) <i>Market surveys, methods, and cost</i>	30,000	25,000
Object: To make comprehensive and detailed studies of the origin, movement, distribution, and consumption of market supplies of farm products, especially fruits and vegetables, in order to accumulate and disseminate useful information relating to all phases of the subject, including available and prospective production; movement of products into storage; the various agencies by and through which farm products are handled, distributed, stored, and sold; costs of doing business through existing market channels; methods of inspection in vogue.		
Results: Together with other investigational work, studies are under way covering market preferences and the consuming capacity of different markets. Study has been made of the prevailing methods of marketing northwestern boxed apples and the marketing methods employed in the most important regions producing peanuts, beans, and potatoes. Through the cooperation of some 1,200 storage warehouses monthly reports have been issued, in cooperation with the project "Transportation and storage," regarding the cold-storage holdings of 44 classes of perishable foodstuffs, including barreled and boxed apples, creamery and packing-house butter, cheese, lard, case and canned eggs, 25 kinds of frozen fish, five classes of poultry, and six classes of meat. There has been a great demand for these reports and for the expansion of the service to include additional commodities. The United States Food Administration has found them of value in their efforts to prevent hoarding.		
(c) <i>Market grades and standards</i>	28,000	27,520
Object: To develop practical grades and standards for fruits and vegetables, with a view to the ultimate national standardization of grades; to encourage and educate growers and shippers properly to grade and pack their products in order that they may be marketed economically and efficiently; to study the construction, equipment, and management of fruit and vegetable packing houses in order to determine the plans and methods best suited to the various crops and conditions; and to develop fixed and uniform standards for containers for fruits and vegetables in order to facilitate the marketing of these products.		
Results: The bureau is now prepared to make definite recommendations regarding the grading and packing of potatoes, sweet potatoes, onions, strawberries, apples, and peaches and regarding packing-house plans and general handling methods. In conjunction with the Food Administration, the Bureau of Markets was able to recommend immediately potato grades for use by member Federal Reserve Banks when in August, 1917, they were authorized to make loans against warehouse receipts for potatoes properly graded, packed, stored, and insured. A specimen apple-grading law has been prepared after the most thorough investigation.		
(d) <i>City marketing and distribution</i>	12,000	10,560
Object: To investigate the distribution and marketing of farm products in cities, in order to determine and encourage the practice of the best methods and to extend advisory aid to city authorities and other interested persons in establishing economical and efficient marketing facilities.		
Results: Advice has been given to many cities regarding all phases of municipal public-market activity. Considerable study has been given to the possibilities of wholesale terminal produce markets, and requests have been received from some of our largest cities for aid in developing large terminal plans. Model plans for various types of market places and structures have been prepared. Cooperative work is being carried on in Providence, R. I., with the Providence Market Gardeners' Association in the conduct of a local market news service. This work consists of recording the amount of each locally grown product brought onto the farmers' market each morning; the posting of the total figures at as early an hour as possible, in order that they may serve as a guide to the buyers and sellers; the securing of complete information regarding the prices at which the various products sold; preparation of a market news story for the local press, in which quantities and prices are given, and bringing the products which are in greatest supply to the attention of the public. The result of this work has been to lower retail prices throughout the city, to stimulate consumption of locally grown products, and to stabilize the prices received by the grower. This work has been extended to other cities with emergency funds.		

SUMMARY AND PRINCIPAL ACTIVITIES OF BUREAU OF MARKETS—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
1. MARKETING AND DISTRIBUTING FARM PRODUCTS—Continued.		
<p><i>(e) Transportation and storage.....</i></p> <p>Object: To investigate the service furnished by common carriers of every kind in the transportation of farm products, particularly perishables; to ascertain the need for more and better service in particular sections and in connection with particular commodities and to cooperate with shippers in securing and with carriers in inaugurating such service; to inform carriers as to the greater needs of the shippers in transportation service and to bring shippers to a better understanding of their rights, duties, and joint responsibilities with the carriers in the safe transportation of their products to the consumer; to study the costs of construction, operation, commercial practices, and legal restrictions governing common and cold-storage warehouses and the relation of these to storage charges; to determine accurately the amount, kind, and location of all available public storage space in the United States for foodstuffs (except grain) and the rates charged for its use; to ascertain and publish at stated intervals the quantity of foodstuffs held in public storage and the quantity held in private storage for sale, the points at which these foodstuffs are so held, the relation of these points to producing sections, the length of time they are held, and the effect upon prices of holding them.</p> <p>Results: Through the activities of this project, which acts as a traffic division for the entire bureau, it has been possible to secure in connection with the various market new services the cooperation of 367 railroads, 6 express companies, and 6 boat lines, which report to the bureau regarding shipments. Studies are being made of the proper methods of construction of storage houses, practical equipment, and methods. A survey has been made to determine the amount of storage space available in the United States and other related matters. This project cooperates in the issuance of cold-storage reports described under "Market surveys, methods, and costs."</p>	\$17,000	\$14,180
<p><i>(f) Direct marketing activities.....</i></p> <p>Object: To determine the feasibility, both from a physical and economic viewpoint, of marketing farm products by parcel post and by express from producer to consumer direct and to ascertain the best methods to be used.</p> <p>Results: Field studies have been made in the vicinity of various cities to determine the possibilities of marketing direct from producer to consumer and to ascertain the relative success of efforts that have been made to popularize direct marketing, either by parcel post or express. The demand for information regarding the subject of direct marketing of farm produce is answered by means of demonstrations and illustrated lectures, bulletins, and correspondence. This project cooperates with the States Relations Service of the department in the marketing of the products of Southern girls' canning clubs.</p>	12,800	11,500
<p><i>(g) Market business practice.....</i></p> <p>Object: To investigate the business practices of cooperative and farmers' marketing, distributing, purchasing, and rural business organizations and other marketing agencies, with special reference to their accounting systems and methods of auditing, business organization, and financing, and to devise suitable methods of business practice and accounting systems for these organizations and agencies for the purpose of increasing their efficiency.</p> <p>Results: The use of systems and methods of accounting and business practice devised and published by this bureau has been extended among grain elevators, live stock shipping associations, fruit and produce associations, and cooperative stores. Nearly 1,000 grain elevators are using the system devised by this bureau. This is fast becoming the standard system of accounting for cooperative and private elevators. Through the introduction of this system it has been possible to compile figures showing the cost of operation in about 175 elevators. Following the formation of the Fruit Growers' Agency in the Pacific Northwest, a representative of this project was detailed to study the accounting problems of organizations in that section, and a uniform accounting system has been devised for the associations in that region. An accounting system is being devised for commission houses. An accounting system has been devised for cotton warehouses and country creameries.</p>	29,500	28,780
<p><i>(h) Foreign marketing investigations.....</i></p> <p>Object: To investigate foreign markets for American farm and non-manufactured food products, from the handling at the American seaboard to the distribution in foreign countries, and to assist so far as possible in the development of the export trade in such products; to investigate especially the export facilities at the American seaboard and beyond, the methods and costs of physically handling products intended for shipment abroad, trans-oceanic and foreign transportation, the methods of distribution and sale in foreign countries, their sources of supply, the consumptive demand, trade practices and preference, and the various competitive factors encountered abroad by the American producers and shippers; incidentally to investigate successful foreign systems, cooperative and otherwise, for purchasing farm supplies and marketing farm products, including a study of representative consumers' organizations, municipal markets, and the conditions under which they have been developed; and to investigate the importation by the United States of farm and nonmanufactured food products, and the influence of such imports on the domestic markets.</p>	13,000	13,000

SUMMARY AND PRINCIPAL ACTIVITIES OF BUREAU OF MARKETS—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
1. MARKETING AND DISTRIBUTING FARM PRODUCTS—Continued. Results: The work on this project has been largely a matter of preparation. It will be carried on in close cooperation with the Consular Service and the Bureau of Foreign and Domestic Commerce. The specialist in charge of the project has spent several months in Europe studying conditions under which the investigations must be carried on and interviewing trade organizations and important firms engaged in handling such products as cotton, grain, fruits, etc. Much valuable trade information was secured in this way. The grain-standards act was explained to dissatisfied grain importers and these firms were impressed by the possibilities of the act. Some grain-trade organizations circularized their members on this subject. A study is now being made of the fruit markets across the Pacific with a view to aid the American fruit industry to develop new export outlets. Plans have been made to deal with the problems of the reconstruction period which must follow the war.		
(i) <i>Miscellaneous problems in marketing and cooperation</i> Object: To enable the Bureau of Markets to cooperate effectively with those governmental agencies already conducting investigations in the marketing of specific products; to take up the study of new lines of investigation relating to the preparation, handling, preservation, and marketing of animal, food, and miscellaneous products not specifically provided for under other projects and to the organization of rural commodities. Results: The wool-marketing work of the bureau is being financed partly from the funds assigned to this project and partly from those allotted to investigations regarding marketing of live stock, meats, and animal by-products. A specialist in wool marketing has been appointed and arrangements have been made for the issuance of quarterly reports showing stocks of various commercial classes and grades of grease and scoured wool, tops, and noils. The first of these reports showing stocks on hand June 30, 1917, was released Aug. 1 and constitutes the most complete inventory of wool supplies in the United States ever compiled.	\$14,800	\$12,600
(j) <i>Cotton handling and marketing</i> Object: To investigate the commercial processes involved in the handling, marketing, and utilization of cotton, in order to make recommendations as to improvements and economies; to conduct investigational work in connection with the organization of communities of cotton growers to market their product; and to make experiments regarding the advantage of growing cotton from pure seed in these communities. Results: Surveys have been made of long-staple and Sea Island primary markets, studies have been made of market conditions in various States, and assistance in the preparation and marketing of cotton by classification before sale was rendered to farmers at various points in order to demonstrate the value and practicability of knowing the grade and staple of cotton and the value of selling in even running lots of grade and staple. An investigation is under way to determine whether cotton can be accurately classed by the use of gin samples. In order to facilitate the transportation of the cotton crop, efforts are being made to have all ginnerers adopt uniform dimensions in baling cotton. Investigations have been conducted to determine the effect of compression on cotton fiber. Spinning tests have shown that cotton bales may be compressed to a density of 35 pounds per cubic foot without injury to the fiber.	20,500	19,500
(k) <i>Cotton warehousing investigations</i> Object: To accumulate and disseminate useful information relating to the warehousing of cotton, insurance rates while in storage, and benefits, including better arrangements for financing, to be derived from conserving cotton in storage houses, the construction of different types of warehouses, and the relation of present methods and practices of compressing cotton to warehousing. Results: In cooperation with the project "Cotton handling and marketing" exhausting tests have been made to determine the practicability of grading cotton by gin samples in order to avoid the necessity of tearing or cutting the covering of bales and to eliminate much waste due to excessive sampling. The data obtained from these tests show that there was practically no difference in grade between samples taken at the gin and those cut or torn from the bales at the time cotton was sold. Investigations were made to determine the value accruing to warehouse receipts on account of the addition of a statement showing the grade of the cotton stored thereunder, and the results of these investigations show that this information on the receipt is especially valuable where the receipts are offered as collateral. Tabulations have been made showing the location and capacity of the cotton warehouses in the United States, together with other details regarding the same subject. The information obtained in the course of these investigations will be used in connection with the administration of the United States warehouse act.	9,040	7,840

SUMMARY AND PRINCIPAL ACTIVITIES OF BUREAU OF MARKETS—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
1. MARKETING AND DISTRIBUTING FARM PRODUCTS—Continued.		
(l) <i>Marketing cotton seed and its products</i>	\$4,700	\$4,700
Object: To investigate present methods of handling, marketing, and utilizing cotton seed and its crude products, with a view to suggest means whereby improvements may be made and economies effected, and to make studies regarding future trading, the establishment of standard grades, and the standardization of conditions under which cotton seed and its products are handled and stored.		
Results: Practically every cotton-seed section in the South has been visited and interviews have been had with many oil-mill men, chemists, brokers, ginners, and farmers, practically all of whom agree that many uneconomic practices exist in connection with marketing cotton seed and that practical commercial standards should be determined and established. Study is now being made of many phases of the industry, such as the railroad movements of seed, percentages of foreign matter, oil, meal, hulls, and linters contained in commercial lots of seed from various sections, the percentages of seed purchased directly from farmers, etc. A cotton linter survey has been made and many samples from different parts of the belt have been obtained in order to determine the practicability of establishing practical standards linters.		
(m) <i>Marketing live stock, meats, and animal by-products</i>	27,500	34,400
Object: To conduct a thorough study of existing markets and methods of marketing live stock through the large central and small local markets, including transportation, yardage, sale, delivery of live stock, and the slaughter, packing, and wholesale and retail distribution of meat products and by-products derived therefrom; classification and grading of live stock and meats; and other allied subjects: with a view of improving the methods and reducing the cost of marketing live stock, meats, and animal by-products.		
Results: The information obtained in the investigational work conducted by this project has been of fundamental importance in connection with the market report service on live stock and meats. The data secured in the study of the facilities and organization of the centralized markets and the service rendered by them have been of especial value in this connection. Monthly reports of live-stock receipts and shipments are being received from 58 public stockyards, and improved methods of reporting such figures have been adopted by several markets at the suggestion of this bureau. Thirty-seven stockyard companies are furnishing separate reports on stocker and feeder shipments. Study has been made regarding the cost of driving and hauling live stock to shipping points, methods and costs of bedding and loading cars, methods and costs of handling and feeding at market points, and loss, damage, and shrinkage in transit. Surveys have been made to determine the feasibility of establishing cooperative meat-packing plants, and a systematic study of wholesale slaughtering and meat-packing establishments in the North Atlantic States and the great meat-packing centers of the Middle West has been made. Many local marketing problems have been investigated, especially in Louisiana, Arkansas, Virginia, and Colorado.		
(n) <i>Marketing dairy products</i>	17,700	15,300
Object: To conduct a thorough study of the marketing of dairy products and dairy substitutes, including the agreements under which they are sold, the methods and costs of preparing dairy products for market, market grades and classification of dairy products, market quotations and quotation systems, market requirements, market conditions, marketing methods, marketing facilities, and related subjects, in order to suggest measures by which market conditions and marketing methods may be improved and the cost of marketing dairy products reduced.		
Results: The information obtained in the investigational work conducted by this project is of fundamental importance in connection with the work of rendering market reports on dairy products. During the past year particular attention was given to producers' or primary marketing problems. Preliminary work was carried on with over 300 creameries looking toward the issuance of weekly reports of the production of butter in the United States. Cheese marketing has been investigated in the important distributing markets and leading producing sections of the United States and Canada. A general survey of the market-milk business of 40 of the large cities of the New England, Eastern, and Middle-Western States was made and data were secured from over 75 cities in all parts of the United States regarding methods of gathering and distributing the milk supplies of these cities. In addition to the investigations described above, other studies were undertaken on related matters.		

SUMMARY AND PRINCIPAL ACTIVITIES OF BUREAU OF MARKETS—Continued.

Appropriations and activities.	Allotment (lump fund.)	
	1918	1919
1. MARKETING AND DISTRIBUTING FARM PRODUCTS—Continued.		
(a) <i>Marketing grain, hay, and seed</i>	\$23, 700	\$23, 700
Object: To investigate the primary and terminal marketing of grain, seed, and hay, including the costs of marketing and the comparison of services rendered by independent and line elevators and cooperative purchasing and selling associations; future transactions and exchange practices, scalping, prices, market quotations, supply and demand, export trade, and related subjects, in order to suggest possible improvements and economies in marketing the grain, seed, and hay crops.		
Results: Information has been obtained regarding the marketing of grain at country points and terminal markets. The terminal-market investigations have included studies of the organization of boards of trade, chambers of commerce, trade rules, terminal charges, functions and services rendered by brokers, track buyers, warehousemen, and others engaged in the handling of grain. As a result of this and other work conducted by the bureau, inspection and grading charges have been lowered in many instances and made uniform to all parties. The practice of assessing brokerage charges at fixed rates per bushel has been changed in practically all the markets to a percentage basis, and the result has been highly satisfactory to all members of the trade. Studies have been made of the conditions and practices surrounding the marketing of grain and hay in the East and South, particular attention having been given to hay marketing activities.		
Standards for inspecting and grading hay at all points have been studied and compilation has been made of the rules now in effect for use when the work of preparing uniform standards for hay is taken up. Investigations of the practices followed in marketing seed throughout the largest field seed-producing sections in the United States have been undertaken. Comparisons of prices paid to producers at country points in the different sections have been made and also of prices received by country shippers from seedsmen at the large distributing points. The seedsmen of the country have been listed and information has been secured regarding points where surplus stocks are available. Information has been obtained relative to seed-stocks movement and prices and furnished to the department's seed stocks committee for use under the food-production act.		
<i>Preservation of fruits and vegetables in transit and storage</i>	1 8, 460	25, 780
Object: This work is conducted to determine the effect on the keeping qualities of fruits and vegetables of commercial methods and facilities used in harvesting and preparing them for shipment, and the amount of deterioration superinduced by the conditions under which they are stored and transported, in order to demonstrate improved methods of and facilities for harvesting, precooling, loading, refrigeration in transit, transporting, and storing such commodities.		
Results: Orange-handling investigations in California have effected savings to growers and the lemon-handling investigations in that State, which resulted in many changes in the methods of handling lemons, have been of great assistance in eliminating wastes and losses. Investigations of the handling and storing of California grapes resulted in the development of the drum sawdust package and the redwood sawdust method of packing. Prior to these investigations no grapes had been shipped in this way.		
At the present time 400 to 500 cars are shipped so each season. This method of packing made possible the extension of the marketing season for many varieties of grapes by 3 months or more. Investigations in handling and storing berries, cantaloupes, apples, pineapples, lettuce, and other commodities have been attended with good results. Refrigerator cars investigations have demonstrated that the average refrigerator-car equipment is not adequate for the safe transportation of perishable products. Approximately 7,000 or 8,000 cars are now being built in accordance with the recommendations of the department. One company alone is building 2,700 new and improved cars and is remodeling its old equipment, consisting of over 10,000 cars. Investigations relative to the construction and management of common storage houses have resulted in marked improvement of such houses and in the construction and reconstruction of a great many of such houses in accordance with department recommendations.		

¹ This amount is being supplemented by \$20,320 from the subappropriation for pomological investigations of the Bureau of Plant Industry.

SUMMARY AND PRINCIPAL ACTIVITIES OF BUREAU OF MARKETS—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
2. COLLECTING AND DISTRIBUTING MARKET INFORMATION ON FRUITS AND VEGETABLES..... Object: To collect and distribute by telegraph, mail, or otherwise timely information on the supply, commercial movement, disposition, and market prices of fruits and vegetables; to assist shippers in securing better distribution of perishable products. Results: Three series of reports are issued by this project, i. e., daily carlot shipments and jobbing price reports on fruits and vegetables, weekly summaries of carlot shipments, and weekly market reviews. In the calendar year 1916 nine crops were reported upon, i. e., strawberries, tomatoes, cantaloupes, peaches, onions, watermelons, grapes, potatoes, and apples. Permanent branch offices were maintained in Philadelphia, New York, Boston, Buffalo, Pittsburgh, Cincinnati, Chicago, Minneapolis, Denver, Kansas City, and St. Louis. Arrangements were made to secure market reports from the trade in 12 southern markets during the movement of crops from the North and similar reports were secured in eight Northern cities. Market news bulletins were distributed in 40 different producing sections, reaching over 52,000 individuals. In 1917 reports were distributed on 11 crops, and Baltimore was opened as a permanent market station. One of the most radical improvements made in this service was the installation of the leased-wire service connecting all permanent branch offices with the exception of Denver. This leased wire has done much to expedite the service and has enabled the bureau to include more detailed information in its reports. From May 8 to June 8, 1917, a saving of \$6,753.70 was effected by means of this leased wire. A weekly summary of carlot shipments is now sent to about 1,100 persons. Station agents on approximately 225,000 miles of railroad, out of a total of 260,000 miles in the United States, are now reporting daily by mail the shipments of perishable fruits and vegetables from their stations. It is estimated that approximately 750,000 carloads of fruits and vegetables have been reported to this bureau from July 1, 1916, to July 1, 1917, and that these reports represent from 75 to 80 per cent of the total movement of fruits and vegetables in this country. Eighty commodities are included. The weekly market-review service was begun in April, 1917. Each review analyzes the daily telegraphic reports of the week showing the trend of the market and the changes which are taking place.	\$184,740	\$221,600
3. MARKET REPORTS ON LIVE STOCK AND MEATS..... Object: To gather, compile, and publish, at such frequent intervals as will most effectively guide producers, consumers, and distributors in the sale and purchase of live stock, meats, and other animal products, information concerning market supplies, prices, and distribution of such products, and data on related subjects. Results: Funds thus far regularly available have not been sufficient to permit the extension of this service beyond five of the great live-stock markets and four of the principal meat-distribution centers. The facilities already developed for handling current live-stock and meat information include leased wire circuits and market stations extending from Boston, Mass., to Portland, Oreg., and from St. Paul, Minn., to Fort Worth, Tex. At the present time, the following classes of information are being collected and distributed: Daily report on meat trade conditions at eastern cities; daily report on wholesale prices of western dressed beef, lamb, and mutton; daily report on live-stock loadings in the United States west of the Alleghenies; a weekly summary of meat-trade conditions at eastern cities; a monthly report of stock of frozen and cured meats in storage; a monthly report of receipts at stockyards (including more than 60 points); and a monthly report of shipments of stockers and feeders from stockyards (including more than 30 points).	66,800	71,120
4. FOOD-SUPPLY INVESTIGATIONS..... Object: To make investigations relating to the production, transportation, storage, preparation, marketing, manufacture, and distribution of agricultural food products, including the extent, manner, and methods of any manipulation of the markets, or control of the visible supply of such food products, or any of them, by individuals, groups, associations, combinations, or corporations. Results: The Federal Trade Commission is cooperating in the conduct of these investigations. Compilation is being made of all available records in the department and State experiment stations concerning the cost of production of live stock and meat and the principal food grains. Costs of handling grain in country elevators are being studied in the field. Figures to be obtained will show the percentage of cost chargeable to various items, such as labor, fuel, depreciation, etc., and the profit per bushel of handling grain. Figures have been obtained on over 300 typical carlot shipments showing the freight charges, margin of profit, and various handling charges from the country elevator to the consumer. Records have been obtained from shippers of live stock in many districts which show the expenses of marketing cattle from the time they leave the farm until they reach the packer. Plans have been developed for a detailed study of retail meat marketing and of abattoirs and cooperative and other packing plants	50,000	48,800

SUMMARY AND PRINCIPAL ACTIVITIES OF BUREAU OF MARKETS—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
5. MARKET INSPECTION OF PERISHABLE FOODS..... Object: To enable the Secretary of Agriculture to investigate and certify to shippers and other interested parties the quality and condition of fruits and vegetables and other food products when received at such important central markets as the Secretary of Agriculture may from time to time designate.		\$114,000
ts, St. rk ed d- ta, th m- ed ed es. us all is, co- n.		
6. INVESTIGATIONS AND DEMONSTRATIONS OF COTTON STANDARDS AND COTTON TESTING.....	\$48,000	45,920
(a) <i>Investigation and demonstration of cotton standards.....</i> Object: To make field and laboratory investigations and demonstrations of standards for the different grades, qualities, and conditions of cotton, and to investigate the ginning, grading, baling, stapling, marking, compressing, and tare of cotton. (The actual preparation and distribution of the cotton standards established under the provisions of the United States cotton-futures act is carried on under another project.) Results: Investigational work leading to the establishment of standards for length of cotton staple is in progress. During 1917 many samples collected in 23 different markets and from 200 mills were examined. These samples are being carefully classed with a view to develop standards that will be representative and fair to all branches of the trade. Tentative standards for sea island cotton have been prepared. Owing to the advent of the boll weevil into the sea island district and the experimental introduction of new varieties, it will be necessary to make further investigations and await more normal conditions before attempting the official promulgation of standards applicable to this crop. Investigations and demonstrations of the tentative standards of Arizona-grown Egyptian cotton established by the department will be continued through the assignment of a bureau representative to be stationed in the Southwest who will study the applicability of the standards to the crop. The increasing acreages planted to cotton in Arizona each season and the large demand for this cotton from the automobile tire industry add to the importance of this work.	19,380	18,900
(b) <i>Cotton testing.....</i> Object: To ascertain the waste, tensile strength, and bleaching qualities of the different grades, classes, and varieties of cotton in order to determine their commercial and spinning value and to demonstrate the results of such tests. Results: Spinning tests are now being conducted based upon the tentative standards for Arizona-Egyptian cotton for determining the suitability of this cotton for use in manufacturing airplane fabrics. Owing to the scarcity of linen a considerable quantity of sea island cotton is now being used for this purpose. It may be necessary to use cotton altogether in place of linen for aircraft purposes. Spinning tests have been completed at commercial houses in Fall River, at the New Bedford Textile School, and at the North Carolina State College of Agriculture and Engineering. These tests were made on cotton of the 1914 crop covering the range of grades of the official cotton standards. The tests showed the waste content of the highest grade middling fair to be 6.30 per cent, while the lowest grade good ordinary is 14.41 per cent. Other results of considerable interest and importance to the trade were developed in these tests and have been submitted for publication. Spinning tests were completed at the New Bedford Textile School on the tentative standards prepared by the department for this kind of cotton. The results will have a direct bearing on the subject of the official promulgation of these standards after they have been tried out another season in raising the crop. "Triumph," "Lone Star," "Acala," "Rowden," "Tees," and "Half-and-Half" varieties have been tested and determinations made of the superiority of the other varieties mentioned over "Half-and-Half." The latter cotton is a prolific variety producing an extremely poor-quality fiber and short staple, against which the department is conducting an educational campaign.	28,020	26,900

SUMMARY AND PRINCIPAL ACTIVITIES OF BUREAU OF MARKETS—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
7. RURAL COOPERATION.....	\$30,760	\$28,280
(a) <i>Investigation and determination of grain standards.....</i>	10,900	10,455
(b) <i>Rural social and educational activities.....</i>	10,900	3,825
(c) <i>State cooperation in marketing work.....</i>	43,000	61,500
8. GRAIN STANDARDIZATION.....	100,500	92,750
(a) <i>Investigation and determination of grain standards.....</i>	83,500	72,900

(b) Rural social and educational activities.....

Object: To aid in the improvement of social and educational conditions in rural communities by the accumulation and dissemination of useful information growing out of a study of typical communities with reference to their social and educational needs, the work of their existing forms of organization, and the possibilities for improvement through organized activity, to investigate methods of encouraging social-organizations activities; and to study means of improving social, economic, and educational conditions of women and children through the work of women's rural organizations.

Results: A report of the social and economic survey of Albemarle County, Va., was made in 1917, and active field assistance was given in making a community survey of Christiansburg, Va., and the neighboring farming country. A preliminary study has been made of the economic value of women's rural organizations in direct marketing. A list of State and county fairs and a partial list of community fairs has been made, and copies of State laws relating to fairs have been collected. A study has been made of the purposes, costs, financing and maintenance, management, and activities of 60 rural community center buildings. Suggestive programs for the meeting of community organizations have been prepared and furnished to associations in a number of States.

8. STATE COOPERATION IN MARKETING WORK.....

Object: To enable the Department of Agriculture to cooperate effectively with the several States in the employment of agents to study methods of marketing and distributing farm products, to encourage, guide, and assist in coordinating marketing activities undertaken by the various States; and to carry to the people of the States selected for cooperation under this project, by demonstration or otherwise, the results of the investigations of the department relative to marketing and distributing farm products.

Results: Agents have been or in the near future will be located in the following States: Alabama, Arizona, Arkansas, Colorado, Connecticut, Georgia, Iowa, Indiana, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nebraska, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, and Washington.

9. GRAIN STANDARDIZATION.....

(a) Investigation and determination of grain standards.....

Object: To investigate such phases of harvesting, handling, transportation, storage, and grading of grain as contribute information fundamental and necessary for establishing, fixing, and perfecting standards for corn, wheat, rye, oats, barley, grain, sorghums, flaxseed, and such other grains as the usages of the trade may warrant and justify; to investigate the milling and the manufacturing value of wheat and such other grains as are used in the manufacture of flour, meal, and cereal products, to investigate smut and smut control in so far as this factor has to do with commercial grading of wheat, and other matters.

Results: Federal standards for shelled corn, based largely on the permissive standards that had been promulgated by the Department of Agriculture prior to the enactment of the grain-standards act on Aug. 11, 1916, were established and promulgated under date of Sept. 1, 1916, to take effect Dec. 1,

SUMMARY AND PRINCIPAL ACTIVITIES OF BUREAU OF MARKETS—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
<p>9. GRAIN STANDARDIZATION—Continued.</p> <p>following. The standards for wheat were promulgated on Mar. 31, 1917, to take effect July 1, 1917, for the winter wheats, and on Aug. 1, following, for the spring wheats. The large amount of data collected relative to all phases of oats standards has been compiled, tabulated, and put into shape for the promulgation of oats standards. Every effort will be made to announce the final grades in time to have them effective by July 1, 1918. With the limited funds available for this work, investigations to secure information for the determination of standard grades for rough and milled rice have been carried on. Data have been collected to aid in the formulation of standards for barley, grain sorghums, rye, and flaxseed. Investigations to determine the relation between the varying factors of grade and the milling yield of wheat and baking yield of flour have been made with several classes of American wheats. Smut-control investigations were made in the Pacific Northwest during the thrashing season of 1917 with machines especially equipped at the suggestion of the department by the companies or owners with smut-collecting fans. Regardless of the unfavorable weather conditions and extremely short thrashing season the results were quite satisfactory.</p> <p>(b) Grain handling and transportation investigations.....</p> <p>Object: To investigate general and specific commercial problems connected with the handling, transportation, and storage of grain, including methods employed on the farm, at the country elevator, and at distributing and consuming centers; the effect of shrinkage, drying, bleaching, mixing, dockage, cleaning, and handling on commercial value and market practice; the relation of transportation facilities to economic and efficient marketing and distribution of grain, and other related matters.</p> <p>Results: A survey of the grain-storage capacity of the United States has been made, which shows an approximate total for all plants of 1,088,426,000 bushels. A survey has also been made of the daily flour-milling capacity of the country, which shows a daily production of 1,054,548 barrels. This information is available in detail, and is now being called for by other governmental departments, including the Food Administration and the War Department. Preliminary investigations have shown that the extra cost of handling grain in sacks is approximately 3 to 4 cents per bushel.</p>	\$23,000	\$19,760
<p>10. ENFORCEMENT OF THE STANDARD-BASKET ACT.....</p> <p>Object: The object of this legislation, as stated in the act itself, is "to fix standards for Climax baskets for grapes and other fruits and vegetables and to fix standards for baskets and other containers for small fruits, berries, and vegetables and for other purposes."</p> <p>Results: The act has just gone into effect.</p>	4,000	5,000
11. ADMINISTRATION EXPENSES.....	20,105	23,530
<p>12. ENFORCEMENT OF THE UNITED STATES COTTON-FUTURES ACT.....</p> <p>Object: To hear and determine disputes as to the grade, quality, or length of staple of cotton tendered in settlement of future contracts made in compliance with the terms of section 5 of the cotton-futures act; to investigate future markets for cotton to ascertain how accurately their future quotations reflect spot values; to investigate spot markets to determine their fitness for designation as bona fide spot markets; to secure daily reliable quotations for cotton from each of the designated spot markets; to prepare and distribute practical forms of the official cotton standards of the United States for grade of white cotton and for colored cotton, and to inspect these forms, condemn them when necessary, and replace them upon request.</p> <p>Results: There was a decrease of over 50 per cent in the number of disputes heard in 1917 as compared with the number heard during 1916, and a much larger decrease in the number of bales involved in the disputes. The reason for this probably is that the trade has become familiar with the Government standards and with the qualities of cotton that is deliverable on future contracts and is conforming to the requirements of the cotton-futures act in that respect. It is unlikely that cotton undeliverable under the law is, in many instances, actually tendered for delivery on contract. During the month of October one firm took up in New Orleans 49,500 bales of cotton on exchange contract. Only 8 of the 158 disputes received during the year included all the bales of the delivered contract. No disputes were received from New Orleans. The total sum collected as costs for the determination of the disputes heard during the fiscal year 1917 was \$1,664.35. All of this fund was covered into the Treasury of the United States in accordance with the provisions of the act.</p> <p>Effective Sept. 1, 1916, the future exchanges at New York and New Orleans made revisions in their rules which were necessary in order to bring them into conformity with the reenacted cotton-futures law. All sales of spot cotton made in New Orleans have been examined by a representative of the bureau, who has kept it advised of general conditions regarding cotton marketing in that city. The parity between spots and futures has been well maintained throughout the year. It is believed that had not unusual and abnormal conditions existed, especially with reference to the export situation,</p>	98,600	88,580

SUMMARY AND PRINCIPAL ACTIVITIES OF BUREAU OF MARKETS—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
12. ENFORCEMENT OF THE UNITED STATES COTTON-FUTURES ACT—Contd. the future and spot markets would have righted themselves much more quickly than they did. Because of these unusual conditions, quotations for middling cotton at times have been quite at variance in many of the markets, but when all things are considered a uniformity and proper parity has been remarkably well maintained. Standards for grade of white cotton were established and promulgated on Dec. 15, 1914; and standards for colored cotton were established on Jan. 28, 1916. To date there have been sold in the United States 853 full and 135 fractional sets of the white standards and 63 full and 25 fractional sets of the colored standards. Thirty-two sets of white and colored standards have been sent to foreign countries.		
13. ENFORCEMENT OF THE UNITED STATES GRAIN-STANDARDS ACT.....	\$519,140	\$456,580
Object: To determine the competence of persons applying for license under the United States grain-standards act and to issue to qualified persons licenses for inspecting and grading grain and certificating the grade thereof, and to suspend or revoke licenses in accordance with the provisions of the act; to hear and determine appeals and disputes which may be referred to the Secretary of Agriculture under the grain-standards act and to prepare the findings in each case; to supervise the inspection of grain in order to secure accurate application of the official grain standards of the United States; and to prepare and enforce rules and regulations relating to the inspection of the grain coming under the provision of the act. Results: The official grain standards for shelled corn were promulgated and made effective Dec. 1, 1916. Rules and regulations of the Secretary of Agriculture under the grain-standards act were issued Nov. 6, 1916. The official grain standards of the United States for wheat were issued on Mar. 31, 1917, and standards for winter wheat became effective July 1, 1917, and for spring wheat on Aug. 1, 1917. The United States has been divided into 35 supervision districts and headquarters have been established in each district. Grain supervisors and samplers are located at the headquarters for 29 districts, and represent the department in the supervision of the inspection of grain for which standards have been established. From Dec. 1, 1916, to Nov. 15, 1917, a total of 574 appeals and four disputes were filed with the department relative to inspections made by licensed inspectors under the provisions of the act. Two hundred and eighty-one appeals were not sustained. The charges in the cases of sustained appeals have been refunded to the appellants, and \$879.38 assessed in appeals not sustained have been covered into the Treasury as miscellaneous receipts. Up to Nov. 20, 1917, 310 licenses were issued to inspect wheat, and 342 licenses to inspect shelled corn. Three hundred and eight inspectors hold licenses to inspect both wheat and corn, one to inspect wheat only, and 34 to inspect corn only. Licenses have been refused to 43 persons, who have been found lacking in qualifications. One hundred and one complaints against the work of licensed inspectors have been investigated by the department. Charges have been preferred against two licensed inspectors for improperly or knowingly or carelessly misgrading grain. From Dec. 1, 1916, to June 30, 1917, 237,595 cars of shelled corn were inspected and graded by licensed inspectors.		
14. ADMINISTRATION UNITED STATES WAREHOUSE ACT.....	59,620	53,540
Object: To inspect and classify warehouses applying for licenses under the United States warehouse act; to license warehouses found to be suitable for the proper storage of cotton, grains, flaxseed, wool, and tobacco; to license persons to act as warehousemen or to accept custody of the products mentioned. To prescribe the duties of warehousemen licensed by the Secretary of Agriculture, and the condition of the bond required and to make rules and regulations for carrying out the provisions of the act; also to establish and promulgate standards for the products defined in the act. Results: Work under this act has necessarily been delayed because of the great amount of legal work demanded of the solicitor's office of the Department of Agriculture in connection with the many laws intrusted to the department for administration. A good deal of preliminary work, however, has been done, which has consisted of an investigation of storage conditions, the establishment of lists of warehouses for the storage of various products, and other matters. Lists of tobacco and wool warehouses have been developed, and kept up to date. By means of a detailed inquiry sent to these warehouses much information has been obtained relative to storage capacities, charges for storage, insurance rates, and related matter. Similar data were obtained previously regarding cotton warehouses. Hearings have been held with warehousemen, insurance men, representatives of the bonding companies, and others interested regarding the rules and regulations for the administration of the act. Rules and regulations for cotton warehouses under the United States warehouse act, including the necessary forms, have been practically completed, and it is expected that it will be possible to consider applications for licenses from cotton warehousemen, classifiers, and weighers in the near future.		

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 Vol. 21, No. 1, January 1, 1928

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part 8

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

STATES RELATIONS SERVICE

TUESDAY, JANUARY 8, 1918



**WASHINGTON
GOVERNMENT PRINTING OFFICE
1918**

THE UNIVERSITY OF CHICAGO
PRESS

AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Tuesday, January 8, 1918.

STATES RELATIONS SERVICE.

The CHAIRMAN. The next is the States Relations Service, page 153.

STATEMENT OF DR. A. C. TRUE, DIRECTOR OF THE STATES RELATIONS SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Dr. True, you have a number of transfers from the lump fund to your statutory roll.

Dr. TRUE. Yes, sir.

The CHAIRMAN. In each case that is at the same salary and the lump fund has been reduced?

Dr. TRUE. Yes, sir.

The CHAIRMAN. In item 6 you have a request for two new places at class 3 in lieu of four clerks at \$840 each, which makes a net decrease in the appropriation of \$160. I assume that is due to the fact that you can not get \$840 clerks?

Dr. TRUE. Yes, sir; they are not available any more.

The CHAIRMAN. Are these the only new places you ask for, Doctor?

Dr. TRUE. Under item 13, a substitution of one "clerk" instead of a "library cataloguer" at the same salary.

The CHAIRMAN. It is just a change of title?

Dr. TRUE. Yes, sir.

The CHAIRMAN. You do that in order to have a little more elasticity in the use of this place, I imagine?

Dr. TRUE. Yes, sir.

The CHAIRMAN. All right. Doctor, take up your general expense items; item 26, to carry into effect the provisions of the act of March 7, 1887. That is the Hatch Act?

Dr. TRUE. Yes, sir.

The CHAIRMAN. There is no change in that, of course?

Dr. TRUE. No change. The next item is the Adams Act.

The CHAIRMAN. The next item is the Adams Act. That is a permanent appropriation in a way. The next item is No. 28.

Dr. TRUE. There is no change in the amount. We have added the words "and the Virgin Islands of the United States," because we are asking for an appropriation for a station in the Virgin Islands, and a small portion of this fund would go to the general administrative expenses in Washington if a station were established in the Virgin

Islands. There is no change in the amount asked for under this item.

Mr. YOUNG of North Dakota. Where are the Virgin Islands?

Dr. TRUE. Those are the islands formerly known as the Danish West Indies, which the United States has recently purchased.

The CHAIRMAN. That, of course, would just be necessary additions of language in the general administrative item if we allowed the appropriation for the Virgin Island which you propose later on in item 32?

Dr. TRUE. Yes, sir.

The CHAIRMAN. Item 29, for farmers' cooperative demonstration work outside of the cotton belt, including the employment of labor in the city of Washington and elsewhere, supplies, and all other necessary expense.

Dr. TRUE. There is an apparent decrease in the item owing to the transfers to the statutory roll. Actually the amount available for that work will be the same if this appropriation is made.

The CHAIRMAN. Doctor, you might outline briefly what progress you are making in this demonstration work outside of the cotton belt. I think the committee would be interested in a brief statement.

Dr. TRUE. The work which we have done under this item is a part of the general system of cooperative agricultural extension work which is carried on under the extension act of May 8, 1914. That consists of the work of the county agricultural agents, the county home demonstration women, and the boys' and girls' club work, together with work done by extension specialists who are sent out from the State agricultural colleges to assist the county extension agents. That work has been speeded up under war conditions and has been greatly augmented by additional emergency funds provided under the food-production act. A systematic campaign for increased food production and for food conservation has been carried on for the past year, with very gratifying results. The Southern States never before produced so large an amount of their own food supplies, and a great deal of that material has been conserved by canning, drying, and other processes, so that the people of the South have produced and have for their use this winter a much larger amount of their own products than ever before.

The CHAIRMAN. Have you had the same gratifying results outside of the cotton belt? This appropriation here deals with territory outside of the cotton belt?

Dr. TRUE. I beg your pardon, I was thinking of the Southern States, which are covered by the next item. This particular item relates to the work in the 33 Northern and Western States, but there the same kind of work is carried on and it has increased in amount and has had special reference to the war needs. We may say, therefore, that throughout the country, as a result of the work under this item and the following one, there has been a large increase of production, generally speaking, and a very large increase in the conservation of food.

The CHAIRMAN. Doctor, would it be possible for you to print, in connection with your remarks, a statement showing the number of men employed a year ago, for instance, under this item, and the number of men and women that have been employed during the

current year under the emergency appropriation and under this appropriation also?

Dr. TRUE. Yes, sir; I will have that inserted in the summary at the end of the hearings on the States Relations Service.

The CHAIRMAN. I think it will be very well to have that in the record. Gentlemen, this work is familiar to the committee and unless the committee desires to ask any questions, we will pass on.

Mr. ANDERSON. I would like to ask one.

The CHAIRMAN. Mr. Anderson.

Mr. ANDERSON. Can you give the increase in the number of county agents this fiscal year over last year?

Dr. TRUE. In a general way I can give that. The number of people engaged in the county-agent work in the country on the 1st of July was about 1,300, and since that time we have added about 1,000 workers, so that we have now about 2,300 people engaged in county-agent work.

Mr. ANDERSON. Are there any counties that have more than one county agent?

Dr. TRUE. Yes, sir; a certain number.

Mr. ANDERSON. About how many?

Dr. TRUE. I do not know that I can give the exact figures. Off-hand I should say perhaps 200.

Mr. ANDERSON. In general, where there is more than one agent in a county, are they following the same line of work or is one or the other of them specializing on any particular work?

Dr. TRUE. In some cases there is a specialist, but as a general rule the assistant county agent is helping the county agent in the regular work of the county.

Mr. ANDERSON. Where there is more than one county agent, is that a result of a desire on the part of the people or is it the result of a policy of the department or the view of the department that more men are required?

Dr. TRUE. I should say, in general, that it grows out of the interest in the work in the county which has brought upon the regular county agent an amount of work which was really too large for one man to carry.

Mr. ANDERSON. Is there the same cooperation and division of expenses where there is more than one county agent as there is where there is only one?

Dr. TRUE. In a general way, yes, sir.

Mr. McLAUGHLIN. Where there is more than one agent in the county, the Government pays the entire expense of the second agent, does it not?

Dr. TRUE. That may be true.

Mr. McLAUGHLIN. Well, is it true or not?

Dr. TRUE. I think it is often true, but the county may increase the amount it pays toward the general enterprise in the county.

Mr. JACOWAY. Doctor, I do not think it is true. My understanding about it is that where there are two agents to the county the county has got to pay half and the Government puts up half. I know it is that way in several counties in my district.

**STATEMENT OF MR. C. B. SMITH, CHIEF OF THE OFFICE OF
EXTENSION WORK IN THE NORTHERN AND WESTERN
STATES, STATES RELATIONS SERVICE, UNITED STATES
DEPARTMENT OF AGRICULTURE.**

Mr. SMITH. I would like to add a word in this connection relative to the assistant agents. There are about 160 of these assistant county agents in the Northern and Western States, and they were taken on at the outset of this work because of its rapid expansion brought about by the war emergency; that is, when emergency funds became available the thing that we did immediately was to get hold of as capable men as we could and put them in counties that already had agents, pending the time when we should need them in new counties. It is these men whose salaries have in many cases been paid wholly by the Federal Government from emergency funds. In the employment of assistant county agents on our regular funds we do not pay all of their salary. We cooperate in the employment of the assistant agents in about the same way that we cooperate in the employment of the county agents. There have, however, been very few of those assistant agents and usually the county itself has paid the whole salary and expenses of those agents. For instance, in Hampden County, Mass., they have there three or four assistant agents, and the county itself has paid all of the salaries, as well as all of the expenses, of all those assistant agents. So, in a general way, the statement is true that where we have been putting in these assistant agents recently with emergency funds we have been paying all of their salaries, but not always all of their expenses; often the county pays their expenses. We have been paying all the expenses of assistant emergency agents simply pending the time when we could take them out of that county and put them in a county of their own.

Mr. JACOWAY. How many of the agents are on your roll?

Mr. SMITH. About 850 county agents and 160 assistant county agents are on our rolls now. We began the year 1917 with 419 county agents and last July had 542 county agents. Since that time we have been taking on additional county agents, and now we have about 850 county agents and 160 assistant county agents.

Mr. JACOWAY. How many of them are paid wholly out of funds of the Federal Government? Could you say offhand?

Mr. SMITH. I can not say offhand, but our thought has been in organizing this emergency work to ask financial cooperation of the counties just as we have heretofore on our regular funds—to organize our work in exactly the same way, to get financial cooperation from the counties and the local farmer's support of it. We have been paying, however, in this emergency work a little larger proportion of the salary and expenses than we have been out of our regular fund. I can illustrate that in this way. On the regular funds of the department and the Lever extension fund the amount usually contributed to a county does not exceed \$1,200 from Federal and State sources. With emergency funds we have been contributing as much as \$1,800 per county. That is about the limit we have set in the Northern and Western States. Sometimes, for unusual reasons, that may be exceeded, but that is the goal toward which we aim—not to exceed \$1,800 in any county.

Mr. ANDERSON. Are the counties being organized on the farm-bureau basis?

Mr. SMITH. Yes; they are in the North and West, all of them. I have a map here that will show you the regular county agents and assistant county agents.

Mr. McLAUGHLIN. When this emergency appropriation was asked for some months ago, my recollection is quite distinct that it was stated that there were 1,350 counties in the country supplied with county agents.

Mr. SMITH. That is, both North and South.

Mr. McLAUGHLIN. You are speaking only of the North?

Mr. SMITH. Yes, sir.

Mr. McLAUGHLIN. I see.

The CHAIRMAN. Anything further on this item, gentlemen? Dr. Smith was about to show the committee a map.

Mr. SMITH. This map [exhibiting] will show you readily how the county-agent work is now developed in the Northern and Western States. The light yellow indicates the regular county agents. The dark orange yellow indicates the emergency agents.

Mr. ANDERSON. I notice you have an emergency agent in St. Louis County, Minn. Is that on the potato proposition?

Mr. SMITH. Yes, and a gardening proposition. That is right close to Duluth.

Mr. ANDERSON. Yes. I think that is what it must be.

The CHAIRMAN. What State is that about the middle of the map? It does not seem to have any agents.

Mr. SMITH. That is Nebraska. County-agent work has developed least rapidly there of all the States. Both east and west it has exceeded the speed of this area right in here [indicating], and that has been due to a number of causes. It would be a long story to go into an explanation of that, but this work is now going ahead satisfactorily; that is, the causes which have been operating against the organization of counties in this section are passing away and the work is going on rapidly, and by February we hope to show you quite a different map.

Mr. RUBEN. The State of Indiana is pretty well covered?

Mr. SMITH. Yes, sir.

Mr. McLAUGHLIN. It is pretty nearly all emergency work.

Mr. SMITH. Yes; that is, we put some emergency funds in there. Previous to this Indiana had made such appropriations that we had practically only a nominal sum invested to bring the State work into closer coordination with the Federal work. Now, with the development of the emergency work and the putting in of some assistants there, we are paying a larger amount toward the organization of these counties, which has made them, for the purposes of this map, emergency counties. Essentially they are part of the regular county agent forces.

The CHAIRMAN. Any further questions on this item?

Mr. HUTCHINSON. I would like to ask the Doctor one question. You say that an increase in conservation of food has been accomplished. What is the cause of the high prices, then?

Dr. TRUE. Any complete answer to that would entail quite a long discussion, and I do not know that I would be competent to make it, anyhow.

The CHAIRMAN. Anything further, gentlemen? If not, the committee will take a recess until 2 o'clock to-day, and then resume the discussion.

(Thereupon, at 12.13 o'clock p. m., the committee took a recess until 2 p. m.)

AFTER RECESS.

The committee met at 2 o'clock p. m., at the expiration of the recess.

The CHAIRMAN. The committee will come to order. When the committee recessed, we had completed item 29, relating to the demonstration work outside of the cotton belt. The next item is No. 30, the demonstration work in the boll-weevil section. Dr. True, do you desire to present this statement yourself or do you desire Mr. Knapp to present it?

Dr. TRUE. I think it might be well if Mr. Knapp should present it.

**STATEMENT OF MR. BRADFORD KNAPP, CHIEF OF THE
OFFICE OF EXTENSION WORK IN THE SOUTHERN STATES,
STATES RELATIONS SERVICE, UNITED STATES DEPART-
MENT OF AGRICULTURE.**

The CHAIRMAN. Dr. Knapp, tell us, as briefly as you can, what you have done during the past year and what you propose to do with funds estimated for next year.

Mr. KNAPP. We have increased the number of county agents, perfecting the organization with the use of the emergency funds. I brought along two maps which show just roughly the organization. This one [exhibiting] shows a pretty complete organization through the southern territory. Although the map may not be just technically correct at the present time, it is roughly correct, and that is the case also in the North and West. And there [exhibiting a second map] is the work for women. We have now, counting the emergency and the regular work, over 1,000 county agents, and the total number of men employed is 1,360. I might say that of those 105 are negroes. Then we have 972 women agents, a part being on the emergency and a part on the regular fund. These people are doing exactly the same type of work, whether they are paid from the regular fund or the emergency fund. Any statement of the offsets by the States and counties just at this time would be a little unfair, because in some cases, just as they have in the North, we have put a man in who is covering, it may be, two counties. He has first to organize those two counties, and then we will get the county appropriations just as soon as we can get to it. We have some pending in that shape now.

I might say that during the past year there has been a great increase in the production of food and feed crops throughout the 15 Southern States in spite of the drought in Texas, Oklahoma, and parts of Louisiana. The total amount of land under cultivations will run between 8 and 10 per cent more in acreage in the South than in the year 1916.

Mr. McLAUGHLIN. You mean in food crops?

Mr. KNAPP. I included cotton, in which there was a 4 per cent reduction. The great increase was in the food and feed crops; for

example, 179 per cent increase in the acreage of velvet beans and 194 per cent increase in peanuts. Then there has been a great deal of extra work that directly refers to the war situation, such as assistance in obtaining labor, organizing in the saving of seed, and holding of seed for planting purposes in the face of high prices. We have had a great deal to do with the removal of the cattle from the drought-stricken area of western Texas, in cooperation with the Bureau of Animal Industry. About 300,000 head of cattle were moved to the Southeast, mainly for breeding purposes, and feed was sent in there to relieve the situation of the cattle remaining. We also helped to stamp out attacks of hog cholera, anthrax, and other live-stock diseases, and aided in the storage and saving of grain, in organizing systems of marketing, and in increasing the production of pork. The big packing houses are building plants in the South, which is the best indication that I can give you that the live-stock industry is on a very great increase in that territory.

Mr. McLAUGHLIN. You have had some of these packing plants for a number of years?

Mr. KNAPP. We had one at Natchez, Miss., which has been there for about five years. We had some in Texas that have been there for quite a while, but in the Southeastern States all of them have developed in the last five years. Armour & Co. have built one at Jacksonville, Fla.

Mr. McLAUGHLIN. That is for imported cattle?

Mr. KNAPP. No; that is for the hog industry, mainly in South Georgia.

Mr. McLAUGHLIN. At what point in Florida is that plant being built to take care of those cattle from Central and South America?

Mr. KNAPP. There is another packing plant being built there—I forgot the name of the town. I do not know whether it is for taking care of that or not. There are also plants at Moultrie, Statesboro, and Valdosta, Ga., Orangeburg, S. C., and Andalusia, Ala. Morris & Co. are building one at New Orleans. The raising of cattle is increasing in all that territory about Jacksonville.

Mr. McLAUGHLIN. That is a very good state of affairs. The South never has produced its own food, as it should and could so easily. It is very gratifying.

Mr. KNAPP. The Bureau of Markets reports that the needs of the South for corn are being met very largely by local production at this time. The 15 Southern States produced approximately 900,000,000 bushels of corn this year, which is almost one-third of the total production of the country. On the conservation side of the matter, I might say that in many sections our reports show that the people put up for home use approximately five times as much stuff as they ever put up before in the history of the South.

Mr. McLAUGHLIN. In all the years put together?

Mr. KNAPP. No; but five times as much as they ever put up in any one year before. That gives them better balanced food, too. It gives them the beans and the peas for winter use, which they did not have in times gone by. Then, we have been introducing the use of the southern-grown crops for making what we call war bread—that is, the use of peanuts and soy beans, particularly, as partial

substitutes for wheat; and that has taken hold very strongly down through that country on account of the large production they have of these crops this year.

Mr. McLAUGHLIN. Are sweet potatoes being mixed with flour to make bread?

Mr. KNAPP. Yes, sir; we are doing that to a considerable extent. I might say that the sweet potato crop in the 15 Southern States increased last year 25 per cent and the Irish potatoes 37 per cent, while the increase in velvet beans was 179 per cent—that is the most marvelous thing—an increase of from 1,680,000 to 5,183,000 acres.

Mr. McLAUGHLIN. On what crop?

Mr. KNAPP. Velvet beans, a splendid legume, which reclaims land as well as any legume we have, and the beans when ground with the pod, make one of the best high-class stock feeds we find anywhere—splendid for dairy cattle, fine for beef cattle. Cattle will eat it in the pod, and it is a splendid grazing crop right on the ground.

Mr. McLAUGHLIN. How far north is that raised successfully?

Mr. KNAPP. That is a very interesting thing. Prior to 10 years ago velvet beans were practically not known north of Florida. To-day they are grown nearly to the south line of Tennessee; that is, throughout the States of Mississippi, Alabama, Georgia, and into South Carolina, and as far up as North Carolina. That is because the department and the agricultural college in Florida, especially, have developed early-maturing varieties. They are also planted somewhat in the States farther west—Louisiana and Texas.

The CHAIRMAN. It is a great plant; there is no question about that.

Mr. KNAPP. It is a wonderful thing. Now, our men and women agents have done a great deal of work that I would not have the time to describe to you. It is a tremendous amount of work. We include the organization of home markets and help people to know what the market prices of things are, facts to which they have been strangers heretofore. I might say that our organizations are mainly along the lines perfected by the Council of Defense organizations. They have perfected community, county, and State organizations that fitted right in with the type of organization we had before that, namely, the community organizations of farmers and their families.

Mr. McLAUGHLIN. Have they been as short of farm labor down there as in the North?

Mr. KNAPP. Yes, excepting in certain sections. In the big northern centers you are probably shorter of labor than they are in the South, and you must remember that nearly 350,000 negroes have been taken out of the South since early last spring; that labor has been lost completely; they have had no way of replacing it at all. So when I say that we increased acreage, for instance in South Carolina, about 10 per cent, that was in spite of a certain percentage of labor shortage. There were two reasons why the southern farmers could carry that increased acreage. One was that with diversified crops one man can handle more acreage than he could in devoting his attention to one crop, like cotton or tobacco. The second reason was that everybody worked more than they ever did before in their lives. They went at this thing seriously and accomplished a great piece of work, and the Bureau of Crop Estimates tells me that the total estimates for all of the farm crops in the South amounts to \$5,164,696,000 this year. That is five-thirteenths of the estimated

value of all farm crops in the United States and is almost equal to the value of all farm crops in America in the year 1909.

The CHAIRMAN. Is your woman's work getting along nicely?

Mr. KNAPP. It is. It is fitting in as fine as anything I ever saw in my life. I believe that it is entirely revolutionizing the rural life of the South, as much so as our men's work is doing, because with this diversification of crops there have come up other things which are greatly interesting southern farmers, like the taking back of the old plans of curing meats and growing poultry and the marketing of the poultry products. Then there have been the canning and the preserving of home-grown products. They have done a lot of drying on account of shortage of cans. They have dried these products for their own home use or they have had community drying. Then they have taken to the use of new things as they have been pointed out to them, on account of the war conditions, the making of new forms of bread and economy in the use of foods. Our women agents have demonstrated new methods of using and conserving foods to the people, and the people have adopted these things. Our agents reached last year 2,000,000 women and girls in the South that we know definitely did some work at their homes—either home drying or home canning or something that was along the line of direct suggestions which came from our organization.

The CHAIRMAN. While not quite in line with this discussion, I would like to refer to a matter of interest at this point. The Post Office Department is establishing a number of what I might call produce routes, using a motor truck to go out into the country over a given route, gather parcel-post packages, bring them back into town, and take some interest in their distribution. Have you given that question any thought?

Mr. KNAPP. Yes. Our people in a number of different sections, Mr. Chairman, have been interested in what the Post Office Department is doing because this enables the girls and women of the country to market in town their farm products, like a good ham now and then, or some canned stuff, and things of that sort. It is a great advantage to have that.

The CHAIRMAN. I have given a good deal of thought to the efficacy of these produce routes, and in speeches before colleges four or five years ago advocated the practice.

Mr. McLAUGHLIN. Along the line of the parcel post?

The CHAIRMAN. Not entirely so. My proposition was broader than that. Of course it is confined now largely to the parcel-post proposition, because that is the limit of the law, but we will have to amend the law in order to make this thing most effective. There is no question but that millions and billions of dollars worth of farm products go to waste because the farmers do not have a market, and if these produce routes can go out there and pick up this stuff, which would otherwise be wasted, it will be a great help to the farmer and likewise a great help to the consumer. It seems to me that it might be valuable from your point of view and yours too, Dr. Smith, when such a produce route is put in, first, to promptly organize that into a selling organization, and then, back in town, to organize a buying association, with a mutual agent, who shall buy from these producers. I think there is a work for you gentlemen that will be very valuable.

Mr. KNAPP. That can be organized very well.

Mr. McLAUGHLIN. You mean in the Post Office Department?

The CHAIRMAN. Yes.

Mr. McLAUGHLIN. So far as transportation and delivery is concerned it will be a post-office function?

The CHAIRMAN. Yes; entirely. But take Dr. Knapp's agent in Sumter County, where I hope to see a route established; he will know the roads over which that route is scheduled and he can meet these farmers and tell them what is going on in town and encourage them to come to the town; and that sort of service is what these people would like to have. That is true of Mr. McLaughlin's own town, and Mr. Rubey's, and Mr. Overmyer's.

Mr. KNAPP. That is true of the creamery. Talk to the people and get the farmers to know how to handle the milk on the route and good results will follow.

Mr. McLAUGHLIN. Do you find the condensers interfering with the creameries in your part of the country?

Mr. KNAPP. Not a great deal in the South. There are some coming in, but the Department through the Dairy Division and my division is trying to get real cooperation, and in the main we have been able to do so. It is true that the condensers are coming in.

Mr. McLAUGHLIN. In some parts of the country condensers are coming in and offering a higher price for the milk than the creameries are able to offer, and the danger is that they threaten to drive out the creameries, and, whereas the life of these condensers is short, the creameries will be gone when the time comes for the condensers to give up; and the work of organizing the creameries will have to be done over again.

Mr. KNAPP. We realize that. I might give you an illustration. I know of a little creamery organized in one State, and the business men who put up the capital agreed that they would never take any more capital without letting the farmers in. This is actually controlled as a cooperative concern, and, after all expenses, taxes, and other items are paid, if there is any balance, it goes back to the producers in proportion to the amount that they put in.

Mr. McLAUGHLIN. That is true in many cases, but the competition between institutions of that very kind, favorably organized as they are, is too great when the condensers offer a higher price for the milk; and the trouble is they take the whole milk, too, and leave nothing for the farmer for feeding his stock. It is quite a serious matter, I think. I expect Dr. Smith has found it so in some of the Northern States.

Mr. SMITH. In Michigan we are sending a good deal of that cream from the northern part of the State clear down to Detroit, Saginaw, and Grand Rapids. Where I live we are sending the cream to Grand Rapids.

Mr. McLAUGHLIN. Is that the result of the breaking up of the local creameries?

Mr. SMITH. No. We have not had many local creameries up in that northern section. We did have some years ago—one organized by promoters, which has been broken up and has gone out of business. But now the farmers are sending their cream through the local store to these larger creameries at Saginaw, Bay City, Grand Rapids, and even to Detroit.

The CHAIRMAN. Anything further, Dr. Knapp? If not we are very much obliged to you.

STATEMENT OF DR. A. C. TRUE, DIRECTOR OF THE STATES RELATIONS SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE—Continued.

Dr. TRUE. Mr. Chairman, a word perhaps should be said about the boys and girls' club work. That work has more than doubled in the past year, and about a million boys and girls were reached through the clubs. They engaged in the work of growing crops, raising pigs or poultry, canning and drying food, etc.

Mr. McLAUGHLIN. Is that in this territory in which Mr. Knapp is engaged or over the entire country?

Dr. TRUE. Over the entire country.

The CHAIRMAN. That is very interesting, Doctor.

Dr. TRUE. Just one other word, regarding a somewhat broader aspect of this county-agent movement under war conditions, because wherever the county-agent system has been organized the Department of Agriculture and the National Government generally has a much more efficient avenue through which to obtain very essential information. That is, in counties organized under this system, we are able now to get the needs and the views of the farmers through personal contact of the agents with them, and we are also able to send out to them whatever advice and assistance the Department of Agriculture may have to give in reference to seeds, the transfer of animals, and so on. In such matters as the promotion of the plans of the Food Administration and the Liberty Loan and patriotic campaigns in general, to inform the country people about the causes and the issues and needs of the war, this county-agent system has been a very effective agency for reaching the rural people. So that under present conditions, taking a broad view of the matter, as regards not only agricultural production and conservation of food, but also these great national interests, the introduction of this county-agent system, and the effort to make it cover the entire country is, in my judgment, one of the most important things that the Government is now undertaking, and it is well worth all the effort and money that we are now putting into it.

The CHAIRMAN. Item 31, Doctor, on page 160, to enable the Secretary of Agriculture to investigate and report upon the organization and progress of farmers' institutes and agricultural schools in the several States and Territories. There is no change in that item?

Dr. TRUE. No change in that.

The CHAIRMAN. You regard that as a valuable work, Doctor, do you?

Dr. TRUE. Yes, sir.

The CHAIRMAN. And the work is practically the same as it has been, I assume?

Dr. TRUE. It is going along on the same lines.

The CHAIRMAN. Any questions on that item, gentlemen? If not, take up your next, 32.

Dr. TRUE. We come there to the insular stations.

The CHAIRMAN. Do you desire Dr. Evans to discuss that?

Dr. TRUE. Probably that would save time, since he is more familiar with the details.

The CHAIRMAN. Very good, Doctor. Will you tell us something about that work?

STATEMENT OF DR. WALTER H. EVANS, CHIEF OF THE DIVISION OF INSULAR STATIONS, STATES RELATIONS SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Under this item you have an estimated increase of \$35,000, which you propose to expend in a certain way. First, you have an increase of \$5,000 for the Alaska stations. Tell us about that, please.

Dr. EVANS. Do you care for me to briefly review the work of the Alaska stations?

The CHAIRMAN. A brief review would be very good, and then tell how you intend to use this additional \$5,000.

Dr. EVANS. As the committee has been told a number of times, an attempt is being made to develop some agriculture in Alaska, and we think we have had very good success. I wanted to mention particularly the success the stations are having with cereals. One of the things we were told at first was that cereals could not grow in Alaska, but at Fairbanks Station last year we had enough on acre plats to get acreage yields, and yields of from 36 to 40 bushels per acre of spring wheat, 25 of winter rye, 20 of buckwheat, 35 to 40 of barley, and 60 to 90 of oats were obtained. Altogether something like 600 bushels of these different cereals were grown at the station at Fairbanks last year.

Mr. McLAUGHLIN. Are the grains that you have named the same kind of grains that are raised in our part of the country?

Dr. EVANS. No, sir. They are largely the result of scouring the world and getting the earliest varieties from either high altitudes or high latitudes.

Mr. McLAUGHLIN. I supposed they were different varieties. Is their food value practically the same?

Dr. EVANS. The wheat would class among the hardest of hard wheats. There was one variety of wheat that was brought from Siberia. This is an exceedingly hard wheat and it is producing very well. The barleys are very largely the result of the introduction of varieties from various places, and we are carrying on plant-breeding work with them on the Yukon River, almost up to the Arctic Circle, where we have a station at Rampart. There are half a dozen varieties that we originated by crossing varieties brought from other countries, and these are doing exceedingly well. They are well established. They are heavy yielders, the main trouble with some of them being that the straw is weak and the wind blows them down. Some varieties have a rather stiff straw, and this year they went through the season without blowing down and are now doing very well.

Mr. McLAUGHLIN. Have you been able to get them over large areas, or is your planting done on specially cultivated areas?

Dr. EVANS. This work is on the experiment station at Fairbanks. One of the things done as an emergency proposition this year was the distribution of seed grain to ranchers in the Tanana Valley, some of whom had had no experience in farming. Lots of grain, in an average amount of about 6 bushels for an individual, were distributed with the understanding that the rancher was to put them in according to instructions, harvest them, and make returns—that is, give back to the station an equal amount of seed. That was the

first distribution of anything of that kind or any attempt to do cooperative work in Alaska on any scale for cereal production.

Mr. McLAUGHLIN. Have you received reports from those?

Dr. EVANS. We have received reports from some of them. Some of the ranchers sowed the grain too late; others got interested in mining operations and forgot when the time for harvesting came, or they were away and did not harvest; but for the most part they got results that for the first time were very flattering, indeed. Some of the reports have been received. One, I recall, reported that he thought from the amount of oats he sowed that he got a yield of something better than 60 bushels per acre. It was the first time he had grown oats and he thought he had done exceedingly well.

Mr. RUBEY. How many acres did he have in?

Dr. EVANS. I can not answer that. As I say, the seed was distributed in various amounts, with a maximum of 6 bushels, and how much each man got I do not know. It takes usually a year to get returns and get the information compiled.

Mr. LEE. You have to use fertilizers?

Dr. EVANS. There has not been much done with fertilizers, except at the station and by the truck growers, but we have given attention to trying to get some leguminous plants to grow in that country. We have got alfalfa and a species of vetch that do very well.

Mr. McLAUGHLIN. Are these results at the station due to the liberal use of fertilizer?

Dr. EVANS. We have never had enough fertilizer there to liberally fertilize. Much of the work was the result of what might be called a modified dry farming, the crop being planted every other year. There is one thing that the stations have done in Alaska that has been rather promising, that is, the growing of turnip seed. That might look as though it was an easy matter, but there are difficulties in Alaska in growing turnips that are not subject to the root maggots. Some years ago, however, a variety of turnip was found in Finland that is not attacked by this worm, and last year over 1,200 pounds of turnip seed of this particular variety were produced for distribution in Alaska. So we think, from that standpoint, we have made quite a good deal of progress.

A new station was established last year under an immediately available appropriation for developing a station in the Matanuska Valley. The station is located about 2 miles from the junction of the branch from the Matanuska coal mines with the Government railroad that is being constructed from Seward to Fairbanks. On that tract we began some work. There has been cleared and prepared for planting this next season about 7 acres of land. A house and an office have been erected and a barn for taking care of the stock. If the increase asked for the Alaska stations is granted, we propose utilizing some of it in further developing this Matanuska station and in securing a man to go around over the Territory of Alaska and teach the people how to farm. Most of the homesteaders are miners or fishermen, or something of that kind, and they know very little about farming. As a result of this cooperation in the Tanana Valley, about which I spoke a few moments ago, we want to put in a man who will go from settlement to settlement and tell the people how to plant and what to do with the crop after they have grown it.

So that the \$5,000 additional asked for the Alaska stations will be for the further development of this Matanuska station and what might be called demonstration and extension work throughout the Territory.

The CHAIRMAN. I see you have had some tuberculosis among your cattle at Kodiak.

Dr. EVANS. I had forgotten to mention that. We have been operating for a number of years a live-stock breeding station, and we thought we had a most excellent herd of Galloway cattle. They proved very hardy, and were proving the fact that cattle can be raised and kept at Kodiak on silage and hay made from native grasses. About a year ago, however, we found that tuberculosis had appeared in the herd, and it was necessary to have about one-third of them slaughtered. The other reactors have been isolated, and all of them are at the Kalsin Bay Station, 12 miles from Kodiak. Those which did not react, but which are sound, healthy animals, are at the village of Kodiak. The inspector of the Bureau of Animal Industry, who went from Seattle to inspect these cattle, condemned our stables, and we are very desirous of trying to put them in something like a sanitary condition. The stables were built with the proceeds from the sale of products raised at the stations. When we could get a little money we would enlarge these stables, and, as a consequence of doing the work in that way, our stables are little more than a series of sheds, one added to another. There was no attempt made for sanitary construction.

The CHAIRMAN. What proportion of this amount do you intend to devote to that work?

Dr. EVANS. The probabilities are that to fix those stables so that they would be approximately sanitary, though not sanitary or modern stables in all respects, it would take a couple of thousand dollars of the increase.

The CHAIRMAN. How large is your herd now? How many cattle have you?

Dr. EVANS. We have now about 60 head altogether. That includes some Holsteins that were taken there the past year. An experiment has been begun to make a cross between the Galloway and Holstein to see if we can not get a dual-purpose race; that is, one that will be a fair milker and still have the hardy, resistant qualities of the Galloway.

The CHAIRMAN. You desire to employ one man who will do extension work?

Dr. EVANS. Who will do extension work and devote practically all of his time to visiting the principal settlements. The Matanuska Valley, where our station has just been started, has probably 700 ranches—homesteads that have been taken up in the last two or three years. We desire to have a man who will devote his time to instructing those people, also those in the Tanana Valley and various settlements in different parts of the Territory.

The CHAIRMAN. You will have to pay him how much?

Dr. EVANS. We have estimated that we will have to pay about \$2,000, and his traveling expenses will probably be \$1,000 more.

The CHAIRMAN. Will you please summarize your items of increase for the Alaska stations, Doctor?

Dr. EVANS. The \$5,000 increase asked for will provide \$2,000 for the stables at Kodiak, \$2,000 for the extension worker, and possibly \$1,000 for his travel. It is quite possible that the travel can be taken care of from the other appropriations.

The CHAIRMAN. About how much would you use on equipment?

Dr. EVANS. Equipment—you mean for all the stations?

The CHAIRMAN. No, for this Matanuska Station.

Dr. EVANS. For the Matanuska station the equipment has practically been supplied from the amount that was immediately available last year. Not much increase is contemplated for equipment this year.

The CHAIRMAN. In other words, this \$5,000 would be used largely for the Kodiak Station and for the general extension work?

Dr. EVANS. For Kodiak and the extension work.

The CHAIRMAN. How many people are engaged in farming in Alaska, do you know?

Dr. EVANS. I do not think there has ever been any attempt made to find out, but, as I mentioned a moment ago, about 700 homesteads have been taken up in the Matanuska Valley; 1,000 have been taken up along this proposed railroad; there are probably 1,000 or more in the Tanana Valley, and there are a few at the different little stations along the rivers and along the coast throughout the whole Territory.

The CHAIRMAN. Three thousand or four thousand in all?

Dr. EVANS. I presume so. I do not think there has ever been any attempt made at anything like a census of the matter.

The CHAIRMAN. Do they devote themselves entirely to agriculture, or is that a sort of a side line?

Dr. EVANS. Farming is usually a secondary affair. It is subsidiary to fishing or mining or, as many of those people are now doing, working on the railroad that is being constructed by the Government from Seward to Fairbanks.

The CHAIRMAN. Any questions on the Alaska stations, gentlemen? If not, take up your next item, Doctor.

Mr. HAUGEN. Can you give the value of the farm products of Alaska?

Dr. EVANS. I do not think there has ever been even the wildest sort of an approximation made regarding them.

Mr. HAUGEN. Can not you give an approximation?

Dr. EVANS. I could not.

The CHAIRMAN. Take up Hawaii, where you have an increase of \$5,000.

Dr. EVANS. In Hawaii the increase asked for is to further develop the extension work that Congress authorized in 1915. In 1915 Congress gave \$5,000 for extension purposes, as the Lever bill covers only the continental United States. This work has been organized with a man at the head doing the extension and demonstration work. The headquarters are on the island of Maui, which probably has the largest number of homesteaders of any of the islands of the group. He visits the other islands as he can, but we desire to have enough money to put on another man, probably on the island of Hawaii, the largest island of the group, and on which some new homesteads are to be opened very shortly—I believe the 14th of this month. A man is desired who will devote himself to demonstration and extension

work for the small homesteads on that island. The other portion of the increase asked for in connection with the Hawaii station is to carry out a little further the cooperative work which was begun two years ago in helping the War Department produce forage for its live stock at Scofield Barracks and for taking up a very important line of work which has never been conducted until the last year—that is, the study of some of the plant pests which are very troublesome in the island. A man was transferred from the Bureau of Plant Industry a little more than a year ago, and he has already worked out a spraying method for spraying potatoes, this crop being grown to a considerable extent at higher elevations. There is nothing new in the spraying of potatoes, but it was new in Hawaii, and this specialist was successful in increasing the quantity of potatoes from sprayed plants over those from unsprayed plants from 50 to 90 per cent. That is something that ought to be demonstrated throughout the entire group wherever potatoes can be grown.

Also in his studies there he has found one or two very serious banana diseases which were not known to exist in the islands, and these need immediate investigation, as the banana is one of the principal food crops grown. One or two other things need investigation—for instance, coffee diseases. The amount of money we are requesting will be largely expended in providing for additional extension work, for the increased forage-production work in connection with the Army, and for this plant-disease work.

The CHAIRMAN. Any questions on that, gentlemen?

Mr. McLAUGHLIN. The people of Hawaii feel slighted because they were not included in the provisions of the Lever law. They feel that they at least ought to be treated like one of the States of the Union. They carry on agriculture out there in an intensive way. Some of the finest cultivation I have ever seen is in Hawaii. I met the president of the agricultural college and three of the regents one day at lunch. They are very fine gentlemen, very much interested in their work, and they say that any money given to them will be put to good use, but they mentioned two or three times that they are not included in the Lever law. I wish Mr. Lever had been there to talk to them.

Dr. EVANS. What Mr. McLaughlin has said about them is true. They are very pleasant gentlemen, but we have been expending this money in almost identically the way that it is being expended in other parts of the country.

Mr. McLAUGHLIN. But the amount is not as large.

Dr. EVANS. It is not as large, but we are asking for an increase of \$2,500 to put this man on the island of Hawaii to carry on the work. They are practically county agents for the different islands.

The CHAIRMAN. Do the islands cooperate with you?

Dr. EVANS. No; not at all. The last cooperation we had in connection with the Territory was in what was known as the Cooperative Marketing Division, which was established under the auspices of our station. The Territory cooperated with us for quite a while, but the appropriation was changed by the last legislature, and on the 1st of July the Cooperative Market, as we call it, was turned over to the territorial Board of Agriculture and Forestry. We had been running it as a means for the marketing of produce grown on the islands by the homesteaders. In addition to operating it as a whole-

sale market, they were running a retail market where a 10 per cent margin above cost was charged. After the authorities took the market over they closed the retail part on the 1st of December, and are confining it now to a wholesale market.

The CHAIRMAN. It seems to me you might interest these people in the cooperative arrangement under this extension idea.

Dr. EVANS. They have declined to cooperate unless they were given the whole management of things. Our fundamental idea has been the diversification of agriculture, and that has not in the past been the fundamental idea of those in authority in Hawaii.

Mr. McLAUGHLIN. After the homestead proposition is established they are going to come to it. They will have to come to it.

Dr. EVANS. The people are very much divided on the proposition as to whether to lease to the highest bidder or divide the land into homesteads.

Mr. McLAUGHLIN. There are 30-year leases, many of them expiring this year. The law provides for the homesteading of these areas at the request of 25 citizens, and petitions signed by the 25 have been filed in some places, and they are all ready to provide for the arrangement of the homesteading of these areas; and my impression is that, if that goes through, as I think it will, the individual homesteaders will need help, as our farmers in this country need help, by suggestion and demonstration, etc. You speak of cooperative work, but the States do not cooperate by contributing anything under the Lever Act until the amount contributed by the Federal Government exceeds \$10,000 a year, and the amount allowed to Hawaii has never reached that figure.

The CHAIRMAN. All right, Dr. Evans. Take up your Porto Rico station, where you ask for an increase of \$5,000.

Dr. EVANS. The Porto Rico situation is somewhat similar to the other. The \$5,000 additional for Porto Rico is desired for two particular investigations, one for rice production and the other for investigations of citrus diseases. The department's rice expert visited Porto Rico last year. He estimated that at least half of the \$5,000,000 worth of rice that is imported into Porto Rico annually can be produced on the island, and work has been tentatively begun. We desire, in cooperation with the Bureau of Plant Industry, to continue that work to the extent of about \$2,500, which will be necessary for carrying it on in a number of places in the island. The question of food production, not only in Hawaii but also in Porto Rico, has been very acute in the last year; and this is one of the methods we propose for solving that problem.

I might incidentally mention the fact that, as a war measure in Porto Rico, through a campaign of the station, the growing of beans, which previously had been imported to the extent of about \$800,000 worth a year, was started. The farmers have now already produced enough beans for their own use and have beans for export, showing that through vigorous campaigning and demonstration work it was quite possible in a very short time to supply that need, and we believe that we can aid very materially in supplying some of their other needs, such as rice.

The citrus-disease situation is a serious one. The fruit business of the island has grown up since the American occupation from almost nothing to three and one-half million dollars worth of exports per

year, but, like in all other regions, there are certain troubles that accompany any development of this kind. One of those is the citrus scab, which is giving a great deal of trouble. We wish to take up an investigation of the disease through our pathologist and carry on some rather comprehensive experiments of control.

Mr. McLAUGHLIN. What fruit does that attack?

Dr. EVANS. Oranges and grapefruits principally.

Mr. McLAUGHLIN. Is it peculiar to that section?

Dr. EVANS. It occurs also in Florida. They have this trouble, in fact, in a number of other countries, but it is particularly bad and needs investigation and experiments for control in Porto Rico.

Mr. McLAUGHLIN. Has the canker shown itself there?

Dr. EVANS. No, sir. That is not known to occur in Porto Rico.

The CHAIRMAN. Take up your Guam station.

Mr. HAUGEN. I would like to ask a question—I should have asked it before—about the wholesale and retail establishments in Hawaii. Are they conducted by the Government?

Dr. EVANS. No. We had a sort of advisory control. The money was furnished by the Territory. It was started first under the direction of Dr. Wilcox, who used to be in Hawaii, as he took a personal interest in the matter, and afterwards it was continued; but recently the only control our station had was that of seeing that the vouchers were in proper form and certified. The money for conducting the thing was furnished by the Territory.

Mr. HAUGEN. Why was it done? What was the object of it?

Dr. EVANS. The object was to make a market for the producer of small quantities of fruit, vegetables, and other things. There was practically no market for such material before we took this up. If a man on the Island of Maui had grown a few bushels of beans he could not sell them locally, and by the time he got them to Honolulu the freight bills had practically used up all his profits. There was no one who would handle the small quantities that were being produced.

Mr. HAUGEN. The purpose, then, was to create a local market; is that it?

Dr. EVANS. Practically all the food consumed in Hawaii up to a few years ago was brought from San Francisco. The statement has been made that they did not have a month's supply of food on the islands, which is rather a precarious situation. They began trying to develop some locally grown food products and through this market to have some means of collecting and distributing them.

Mr. HAUGEN. The Government is conducting the business—paying the expenses and the help?

Dr. EVANS. The Territorial government was paying all the expense of the enterprise.

Mr. HAUGEN. Not the Federal Government?

Dr. EVANS. No.

Mr. HAUGEN. Just giving advice?

Dr. EVANS. The station gave advice and one of the men connected with our station was furloughed and detailed in charge of it.

Mr. HAUGEN. Are there any others conducted in that way in the United States?

Dr. EVANS. I am not familiar with that and I could not say.

The CHAIRMAN. Take up your Guam station, Doctor, where you ask an increase of \$5,000.

Dr. EVANS. The Guam station is being conducted with the idea of trying to develop agriculture of that little island so as to make it self-supporting. It used to be that agriculture was practically the only industry, but for various reasons the people quit cultivating their ranches and a few years ago agriculture had fallen to a very low state. We have been working there for several years and have introduced a large number of crops, and, through the cooperation of the naval governor and through the island patrol, as they call it, we have extended these crops throughout the island. What we desire now is to have an extension man who will go out and assist these people by demonstrating what can be grown. You can not reach them by publications, and they do not travel very much from one part of the island to the other. We want to establish, through their schools and in connection with their schools and little communities, demonstrations (you might call them farms, which may be only an acre or two in extent), and then explain to the people the various things we have introduced and found to be well adapted to Guam and which are capable of improving their conditions.

The CHAIRMAN. What are some of those things?

Dr. EVANS. A number of forage plants that we have introduced are doing exceedingly well; and in connection with their introduction, if we get more forage plants growing, there will be more live stock produced. We have gotten some important varieties of corn which are doing exceedingly well. We have introduced peanuts, velvet beans, soy beans, and quite a number of crops of that character, to say nothing of a large number of vegetables, and all of these we want to carry to different parts of the island by this means and teach the people how to support themselves.

The CHAIRMAN. What is the population of the island?

Dr. EVANS. About 20,000.

The CHAIRMAN. And the area?

Dr. EVANS. About 260 square miles, I believe. That is my recollection.

The CHAIRMAN. Is the land pretty productive?

Dr. EVANS. Much of it is very productive.

The CHAIRMAN. What kind of live stock do they have—hogs or cattle?

Dr. EVANS. Hogs, cattle, chickens, and some horses. We have taken improved live stock there. We took some Morgan horses, some cattle and Berkshire hogs, several breeds of poultry, and one or two breeds of goats. With the exception of the horses, they have all done very well.

The CHAIRMAN. What is the nationality of these people?

Dr. EVANS. It is very difficult to say. They are Malaysian as a race and something like the Filipinos.

The CHAIRMAN. Are they thrifty?

Dr. EVANS. They are quite thrifty. Their only crop so far has been the copra, or dried coconut. That has been the only crop that they have produced for export. We have introduced, and it is beginning to be a matter of some little export, the growing of cotton. The cotton is all sent to Japan, as that is the nearest market.

In addition to this extension and demonstration work, we want an entomologist and plant pathologist, not only to investigate some very serious troubles of the coconut and some other plants, but also

to act as an inspector to prevent the introduction of some of the diseases of tropical plants that are very prevalent in Asia and in the Philippines. So far as we know, none of these serious diseases occur in Guam now, but with the transportation one way and the other there is a strong probability, unless there is an immediate effort made to prevent their introduction, that sooner or later some of these things will be introduced in the same way that citrus canker was brought into this country. If they are some of the industries of the country will be destroyed. One of the principal crops for local consumption in Guam is corn, and there is a disease of corn in Java, Japan, and China that is particularly destructive, and we are very anxious to keep it and other pests out. The only way we can do it is to have some skilled pathologist who will recognize possibly injurious diseases and insects from an inspection of every plant or every portion of a plant that is brought there, so as to prevent the introduction of anything that might give trouble.

Mr. McLAUGHLIN. Is it necessary to have a man of that kind remain on the island all the time?

Dr. EVANS. He would have plenty to do, and at the same time he could study diseases and insects that have not been investigated at all.

Mr. McLAUGHLIN. He will be a permanent man?

Dr. EVANS. He would be a permanent man added to the station staff; yes, sir.

The CHAIRMAN. Is it pleasant to live there, Doctor; is the climate good?

Dr. EVANS. Most of the people who have been there seem to think so. It is a small island, with a sea breeze most of the time, except in the typhoon season. I was there in 1909 and I did not find it an unpleasant place at all.

The CHAIRMAN. So a man would not go there just for the love of study? He would have plenty of inducement?

Dr. EVANS. He would have plenty to do in carrying on this work that we propose for him, and there are enough Americans on the island so that he would have plenty of society and entertainment.

The CHAIRMAN. Take up the next, the Virgin Islands, where you ask for an appropriation of \$15,000.

Dr. EVANS. Mr. May, who investigated the Danish West Indies, as they used to be called, for the Navy Department, is here, and if you wish I will ask Mr. May to present this matter. Mr. May is in charge of the Porto Rico station and has been in Porto Rico since 1904. At the request of the Navy Department, last year, when they considered the situation very acute, he was sent from Porto Rico to the Virgin Islands, as they are only 30 or 40 miles east of Porto Rico, and made some investigations, and he can tell you of them in detail better than I can.

The CHAIRMAN. All right, Mr. May.

STATEMENT OF MR. D. W. MAY, AGRONOMIST IN CHARGE OF THE PORTO RICAN AGRICULTURAL EXPERIMENT STATION.

Mr. MAY. It seems to be the policy of our Government to develop a country passing under her sovereignty, seeking especially the improvement of the condition of the people. Shortly after the American occupation in Porto Rico there was established there an agricultural experiment station to develop the agricultural industries, which are the leading ones of that island. Progress is shown by the fact that in 1901, with exports of \$8,500,000, there has followed the most wonderful agricultural development that has probably occurred in the history of the world, our exports having grown greatly right along until this year they were over \$80,000,000. When this Government took over the Danish Islands and put Gov. Oliver in charge he saw that the agricultural conditions there were very backward, and asked the Secretary of Agriculture to send some one there to look over conditions and make some recommendations as to what could be done to develop those islands. After looking over the field it seems that the best way to improve those islands is to establish an agricultural experiment station to work along the lines of the Porto Rico station. It was the special intention, in purchasing those islands, to make a great seaport there which would probably be to the West Indies what Singapore is to the East, and, while the islands will continue to export some staple products like sugar and sea-island cotton, they need a great development in producing ship supplies for the great number of steamers that are going to stop in that port while plying between the eastern seaports of the United States and South America and between European ports and through the Panama Canal. For the development of these islands we have asked for an appropriation of \$15,000, which is necessary, I think, to conduct a properly organized experiment station.

The CHAIRMAN. Mr. May, I see from your note here that the Danish Government maintained a station on the islands before we took them over.

Mr. MAY. Yes; they maintained a station in St. Croix, the largest of the islands, and that station received an income of about \$8,000 to \$10,000.

The CHAIRMAN. Direct from the Danish Government? Then it had, in addition to that, the receipts from the sale of its products?

Mr. MAY. That included the proceeds from sale of its products.

The CHAIRMAN. Do you propose to locate your station at the same place?

Mr. MAY. Yes; that station should be taken over. It is well located, has buildings and 215 acres of land, and is well adapted to the purpose. It only needs a sum for maintenance. Gov. Oliver states that there is not sufficient income from the islands at present to maintain that station, and it seems best that it be maintained as other stations are by the Federal Government.

The CHAIRMAN. Suppose you tell the committee briefly just what lines of work you would undertake to do there to bring about what you have in your mind. What kind of agriculture would you engage in and what crops would you raise?

Mr. MAY. Sugar and sea-island cotton production should be further developed, and also the growing of vegetables and other food crops for the people already on the islands, but especially for ship supplies. The latter will, I believe, be the great future work there along agricultural lines. As a preliminary there should be some investigations on the water supplies of these islands, because the rainfall is not sufficient for the maximum production of crops.

The CHAIRMAN. What is the population of these islands?

Mr. MAY. The three main islands have a population of about 36,000.

The CHAIRMAN. What is the area?

Mr. MAY. The area is about 450 square miles. I am not sure of that. That is an estimate.

The CHAIRMAN. That is approximately it?

Mr. MAY. Yes, sir. There has never been an exact survey made of the islands, so far as I know.

The CHAIRMAN. What kind of crops could you grow? You say food crops? Could you grow vegetables, such as beans and potatoes, or what?

Mr. MAY. All vegetable crops, and there should be more dairying; sweet potatoes, yams, and other native crops that are used in the Tropics for local supplies. Incidentally, the islands could be made to produce a great deal more sugar, though, of course, that will be greatly exported. The present need is to better supply the home demands for food and to supply the shipping that will return to that port after the war.

The CHAIRMAN. You could produce, I presume, about the same character of crops that you produce in Porto Rico?

Mr. MAY. Yes, sir; very well. The conditions are very similar.

The CHAIRMAN. You say the rainfall is not very heavy?

Mr. MAY. It is less than 50 inches in St. Croix and even less than that in St. Thomas and St. John.

The CHAIRMAN. What is the rainfall in Porto Rico?

Mr. MAY. It varies in different sections. On the north side it is about 75 inches, and on the south side, where they practice irrigation, it is about 30 inches.

The CHAIRMAN. You say these buildings at St. Croix are in pretty good shape?

Mr. MAY. The experiment station has substantial buildings and the land is well developed, and they have live stock; but the need is to secure more scientific workers and to provide funds for the maintenance of the station.

The CHAIRMAN. Are these people thrifty—the native population?

Mr. MAY. As a rule, they are. They are largely negroes, like those we have in the South. During the time of the slave trade they were landed in the West Indies or in the slave States, depending on the market. They are from the west coast of Africa. The whites there are very thrifty. They are English largely, and Danes second.

The CHAIRMAN. What is the relative proportions of the white and negro races there?

Mr. MAY. I should estimate that the negro population is about 90 per cent. There is not much of a mixture of the races. They

are rather pure-bred blacks and whites. They have not mixed as they have in the Spanish Islands.

The CHAIRMAN. Do they have the Gullah language like the negroes around Charleston, S. C., which takes an expert to understand?

Mr. MAY. It is very similar to the language that they speak in the South. It is the English language but a little mixed. For example, they have a West Indian name, "callaloo," for the plant we call "pussley" in the South. Sometimes there will be an African word.

The CHAIRMAN. Any questions, gentlemen? If not, we are very much obliged to you, Mr. May.

Mr. McLAUGHLIN. Are there any sugar factories on the islands?

Mr. MAY. Yes, sir; there are several factories.

Mr. McLAUGHLIN. How many?

Mr. MAY. About six.

Mr. McLAUGHLIN. Any refineries?

Mr. MAY. No, sir.

Mr. McLAUGHLIN. Are there any refineries in Porto Rico?

Mr. MAY. No, sir. There is a tendency in those countries to do away with the old open-kettle mills and put in large mills, because the planter can sell his cane to a large mill and get more out of it than he can with the old open-kettle system. In the old open-kettle system his losses were about 40 per cent, while a modern factory will get about 90 per cent. They pay him more than he can get with his own equipment.

Mr. HAUGEN. How many tons of cane will you grow to an acre?

Mr. MAY. In the best fields in Porto Rico, about 60 tons. It will run about 10 per cent of sugar. The average is around 30 tons.

Mr. HAUGEN. How does that compare with Cuba?

Mr. MAY. Our production is not as high as that of Cuba, but our labor is more abundant and cheaper.

Mr. McLAUGHLIN. Do you have to fertilize that cane land?

Mr. MAY. Yes, sir.

The CHAIRMAN. Your next item, Dr. True, is number 33, on page 164, a study of the relative utility and economy of agricultural products for food, clothing, and other uses in the home, etc. That is Dr. Langworthy's work?

Dr. TRUE. Yes, sir.

The CHAIRMAN. And I assume it is the same character of work that he has been doing heretofore except that it has been extended on account of war conditions?

Dr. TRUE. Yes, sir; Dr. Langworthy is here.

STATEMENT OF DR. C. F. LANGWORTHY, CHIEF OF THE OFFICE OF HOME ECONOMICS, STATES RELATIONS SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Tell us briefly, Dr. Langworthy, just what the character of your work has been this year.

Dr. LANGWORTHY. The war has made great differences in our work, because we have had to meet many new requests for data on food and other home economics topics, as a result of the increased scope of the extension education offices of the States Relations Service. Then, too, we have been called upon to meet a great many

emergency requests for information needed in the department's publicity work with respect to the best use which can be made in the home of the available food supply. For instance, how we may best use other foods in place of those we must conserve and at the same time make a palatable and satisfactory diet. This has meant, among other things, much work with corn meal, a food which can be used in a surprisingly large number of useful and palatable ways. These increased demands, I think, we have succeeded in meeting.

Mr. Knapp spoke of sweet-potato flour. This is a product to which we have given a great deal of attention, especially to the ways in which it can be used in the home. The flour we used was made experimentally by the Bureau of Chemistry. It is interesting to say that, aside from its commercial possibilities, sweet-potato flour can be made in the home for home use. From the many tests with it, it seems fair to conclude that it has many possibilities. Sweet-potato flour is a starchy food which also contains considerable sugar, and so it can be used to conserve not only wheat flour but sugar also. We have also made tests with white-potato flour and, cooperating with the Bureau of Chemistry, have studied domestic methods of drying foods, particularly vegetables. Our work with dried fruits, however, has had to do chiefly with ways of preparing them for the table. We have also studied the salt-pickling and preserving of vegetables—an old-fashioned method still in use in many homes—and have continued our studies of home canning; in all these cases studying the use which can be made of the product, as well as home methods for making it.

At the present time no problem is of greater interest to the housekeeper than how to plan and prepare meals which will meet the food needs of the family, conserve certain foods, and at the same time be palatable. Thanks to the studies of food which the department has been carrying on, we are able to make a number of generalizations in plain, simple language which will serve as guides to the housekeeper in solving her problems. We have the housekeeper's testimony that the generalizations are useful, and they are sound because they are based not only on laboratory experience but also on the empirical knowledge of many housekeepers.

It is a simple thing to divide all foods into the following five groups: 1, fruits and vegetables (apples, potatoes, etc.); 2, meats, fish, milk, eggs, beans, and so on; 3, flours, meals, other cereals, and starchy foods; 4, sugars, sirups, and other such sweets; and 5, butter, table oils, suet, fat pork and bacon, and other fats. If the meals which we eat are so planned that all these groups are well represented, we can feel sure that the nutritive substances which the body needs will be supplied. It is easy to so plan meals if one will give thought to it, but experience and experiment have alike shown that, unfortunately, it is equally easy to plan them so that some of the foods which supply needed nutrients are left out. To make these matters clear we have prepared not only new Farmers' Bulletins but are also preparing pictorial charts, which are simpler than the colored charts, which show the composition of food in the form of diagrams, and which were shown to this committee some time ago. The three such charts which I have brought illustrate a breakfast, a dinner, and a supper—and they are meals quite in accord with those which we are accustomed to use—which illustrate how easy it is, by taking thought

to plan meals which are truly adequate. We have other charts which show how easy it is to plan meals which are not correctly planned or balanced. This picture of a breakfast [exhibiting] shows, among other foods a simple, good breakfast food, a bowl of cracked wheat. This is also an inexpensive dish because, if one has the wheat, it can be easily cracked at home by putting it through a meat grinder.

Mr. YOUNG of North Dakota. Is wheat sold ordinarily at grocers?

Dr. LANGWORTHY. It is not usually sold at groceries but very commonly can be purchased from a mill. We purchase the wheat for our experiments here in Washington without any trouble, and it would seem that it could easily be made a retail market commodity if there were a demand for it. If one has wheat which he can crack at home he can easily make an economical as well as a very palatable dish.

Mr. YOUNG of North Dakota. I have often thought there was no reason why wheat should not be displayed in a grocery, the same as cracked wheat or rice or anything of that kind.

Dr. LANGWORTHY. It has been suggested that it would be possible for a grocer to carry whole wheat and corn in stock and crack or grind it in small quantities, just as he does coffee, or, indeed, as he now in so many cases grinds peanuts to make peanut butter to order. If he can do the one, it would seem that there is no reason why he could not do the other and supply his customers with freshly cracked wheat or corn.

Mr. HAUGEN. It has to be thoroughly dry before it can be ground?

Dr. LANGWORTHY. Yes, sir; it has to be dry.

As explanatory statements on the charts make clear, these meals contain representatives of the five food groups. Each of the five groups contain some foods which are abundant, others which are less so, some which are costly, and others which are not. Since, generally speaking, the various members of the group have a similar food value, it is clear that economy comes in choosing the members of each group which are the less expensive. The palatability of the meals depends as much upon the way in which foods are prepared as it does upon food selection, and both these matters have been given attention in the work we have carried on, and are dealt with in detail in Farmers' Bulletins and other publications, as well as in the Department's publicity material.

Mr. HAUGEN. Why do you suggest toast in one of the charts?

Dr. LANGWORTHY. Many like it, and that is a good way of using stale bread.

Mr. HAUGEN. Is it more palatable?

Dr. LANGWORTHY. It is more palatable to a great many. Though toasting does not change the composition of bread much, except to drive off a little water, it does give a flavor to it which makes it more palatable to a great many people.

Mr. HAUGEN. I think Mr. Hoover suggested that people should not eat toast.

Dr. LANGWORTHY. I am uncertain, but, as I recall it, it has been suggested that toast should not be used simply as a garnish or accompaniment for food, as for instance, when a chop or something else is served on a piece of toast, which is intended "for looks" more often than for eating.

In preparing our bulletins and our charts we have had in mind particularly the extension work carried on under the provisions of the Lever Act, and we hope that it will be possible to give these charts wide distribution for extension teaching when we have perfected them.

Mr. McLAUGHLIN. You spoke of dried vegetables. Is either the Army or the Navy using that kind of food at all extensively?

Dr. LANGWORTHY. I doubt if I have information enough to answer the question, except in a very general way. I have understood that large quantities of dried vegetables had been made in the United States for the use of the allied armies, and so I would suppose that using dried vegetables in our own Army is a matter which would be given consideration.

Mr. McLAUGHLIN. I learned a short time ago that the Army and Navy, especially the Navy, were opposed to the use of dried vegetables on account of an experience at the time the fleet went around the world; that some of the dried vegetables soured on the trip and, of course, were unfit to eat; and since that time it has been hard to get the Navy, in particular, to be interested in dried vegetables at all. Do you know anything about that?

Dr. LANGWORTHY. I do not recall ever having heard any such statement.

Mr. McLAUGHLIN. Is it on account of an unwillingness or for any other reason that they have not been using very much of it for our Army and Navy?

Dr. LANGWORTHY. I do not think that dried vegetables have been included in the rations of either the Army or the Navy.

Mr. McLAUGHLIN. Do you think they are now giving consideration to it?

Dr. LANGWORTHY. I do not feel that I have data for a definite opinion one way or the other, but I think that the possibility of using such foods must have been considered. This is my opinion, because I have heard it said that large quantities of dried vegetables were used for soups and for making stews for the British Army.

Mr. McLAUGHLIN. Have they any means or plans that we do not know of?

Dr. LANGWORTHY. I doubt it. In fact, I had supposed that any dried fruits or vegetables which they might use would be obtained very largely from Canada and the United States.

The CHAIRMAN. Anything further, gentlemen? Dr. Langworthy, do you desire to make any further statement?

Dr. LANGWORTHY. I thought that perhaps the committee might like to see these leaflets I have brought, which are just published, as part of a series designed particularly for use in the present emergency food work.

The CHAIRMAN. You furnish the basic work for the home-economics work in the field?

Dr. LANGWORTHY. That is what we try to do, Mr. Chairman.

The CHAIRMAN. Do you follow your own plan of diet yourself?

Dr. LANGWORTHY. Seriously, I do.

The CHAIRMAN. You look it, all right.

Dr. True, your next item is for administrative expenses, where you ask for an increase of \$6,700.

STATEMENT OF DR. A. C. TRUE, DIRECTOR OF THE STATES RELATIONS SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE—Continued.

Dr. TRUE. That is on account of the general growth of the business of the States Relations Service as a whole.

The CHAIRMAN. I assumed that, doctor. Any questions on that, gentlemen? If not, and there is no further statement from you, Dr. True, we will take up the Bureau of Public Roads.

Dr. TRUE. Am I to understand that I shall file for the record a statement of our principal activities?

The CHAIRMAN. We shall be very glad to have you do that. (The statement referred to follows:)

SUMMARY OF PRINCIPAL ACTIVITIES OF STATES RELATIONS SERVICE.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
AGRICULTURAL EXPERIMENT STATIONS (Hatch and Adams Acts, each \$720,000).	\$1, 440, 000	\$1, 440, 000
The Federal appropriations for experiment stations are used in the maintenance of stations in the 48 States. These funds are supplemented by State and college funds, amounting to about \$4,000,000. The station force includes about 1,900 persons, carrying on investigations which cover every branch of agriculture. Under war conditions they are subordinating their more fundamental and permanent investigations and taking up special studies of immediate importance to agriculture at this time.		
ADMINISTRATION OF THE EXPERIMENT-STATION ACTS, THE AGRICULTURAL EXPERIMENT STATIONS IN ALASKA, HAWAII, PORTO RICO, GUAM, AND THE VIRGIN ISLANDS, AND THE AGRICULTURAL-EXTENSION ACT.....	68, 500	68, 500
Administration of experiment-station acts..... This fund is used for work connected with the approval of plans for station work, inspection of accounts and work at the several stations, advice regarding lines of work, personnel, and equipment of the station, and preparation of the Experiment Station Record. The Experiment Station Record consists of two volumes of nine numbers each, with detail, author, and subject indexes. These volumes contain about 7,000 abstracts from the world's scientific literature pertaining to agriculture, together with monthly editorials on special topics in agricultural science and brief notes on the progress of institutions for agricultural education and research.	36, 250	36, 250
Administration of the insular experiment stations..... This fund is expended on the work done at Washington in considering and approving plans of work and expenditures, selection of personnel, review and approval of accounts, reports and bulletins submitted for publication, and miscellaneous advice and assistance.	2, 250	2, 250
Administration of agricultural-extension act..... This fund is spent for work in connection with the examination and approval of plans for extension work, financial reports, inspection of work and accounts in the several States, and the preparation of an annual report on extension work throughout the country.	30, 000	30, 000
FARMERS' COOPERATIVE DEMONSTRATION WORK OUTSIDE OF THE COTTON BELT.	\$578, 240	\$554, 800
This fund is spent for demonstration and extension work in the 33 Northern and Western States in connection with work done with Smith-Lever funds and additional funds from sources within the States.		
Supervision..... The Office of Extension Work in the North and West at Washington includes a small force of expert officers who spend a large share of their time in the field assisting in the organization and supervision of the extension work in the several States. The Washington office also prepares a variety of publications used in the extension work throughout the North and West. It receives and examines regular reports of work and expenditures from the field agents cooperatively employed in the States and in a great variety of ways gives advice and assistance to the extension workers throughout the North and West. Subject-matter specialists in horticulture, animal husbandry, soils, forestry, and marketing are employed cooperatively with department bureaus for extension work in the States.	29, 200	19, 520

SUMMARY OF PRINCIPAL ACTIVITIES OF STATES RELATIONS SERVICE—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
FARMERS' COOPERATIVE DEMONSTRATION WORK OUTSIDE OF THE COTTON BELT—Continued.		
<i>County-agent work.....</i> During the past year the county agricultural agents cooperating with the farmers carried on thousands of demonstrations with corn, wheat, oats, legumes, potatoes, and other crops; secured the adoption of crop rotation systems, installation of drainage and irrigation systems, home-mixing and more effective use of fertilizers and of lime, introduction of better live stock, testing dairy cows, demonstrations of methods of preventing or relieving live stock diseases, especially hog cholera, black leg, and tuberculosis; organization of farmers for marketing and purchasing. The agents made over 200,000 farm visits and received an equal number of office calls from farmers, conducted extensive correspondence, distributed large quantities of publications, prepared about 20,000 articles for the public press, held 11,000 demonstration meetings, and assisted in over 2,000 extension schools. Since the outbreak of the war the county agents have given special attention to increasing the acreage of wheat and rye, corn, potatoes, buckwheat, forage crops, selection and testing of seed corn, increase of pork production, conservation of food supply by better storage and handling, etc. They have also done great patriotic service in instructing the farmer regarding the reasons for our being at war, aiding the work of the Food Administration, and promoting the Liberty Loan. Without a doubt, a large amount of the increased agricultural production of the past season was due to the work of the county agents and other extension forces in cooperation with this department.	\$323,000	\$320,400
<i>Boys' and Girls' club work.....</i> During the past year about 400,000 boys and girls have been regularly enrolled in clubs engaged in special demonstration work in raising corn, potatoes, and other crops, making gardens, growing pigs and calves, poultry raising, canning, bread making, sewing, making various devices for use on the farm or in the home, etc. In addition, about 400,000 boys and girls from the cities were enrolled in special war-emergency projects—gardening, poultry raising, and canning.	115,000	110,300
<i>Farm-management demonstration work.....</i> This fund is used for demonstrating to farmers the importance of recording and analyzing the different factors relating to the organization and administration of the farm business. Farm-management demonstrators are placed in the several States to assist county agricultural agents and other local leaders in conducting farm-business demonstrations. During the past year stress has been laid on the importance and feasibility of keeping simple farm accounts. Over 16,000 farmers received assistance in starting a simple farm-account book, and the county agents were greatly helped in studying the farmers' business and making suggestions to increase its efficiency.	62,000	59,400
<i>Extension work in home economics.....</i> The home demonstration work in the Northern and Western States is done partly by home economics specialists going out from the agricultural colleges and partly by county and city home demonstration agents. At the beginning of the present fiscal year about 20 county women agents were employed. With the aid of the emergency funds this number has been increased to about 365. The work has been largely food conservation, canning, drying, and preserving. There also have been considerable home gardening and poultry raising by women and work in the improvement of household equipment and management, and in the encouragement of community social life. Existing organizations of women have been enlisted in the work, and special organizations have also been formed to support the work of the extension agents. Recently the extension force has cooperated to a large extent in the work of the Food Administration.	35,000	31,200
<i>Special extension field agents.....</i> Extension specialists from the colleges and the department supplemented the work of the county extension forces, assisted them in special enterprises, conducted extension schools, helped to introduce county agent work in new counties, and in many cases took the place of county agents for the time being.	13,980	13,980

SUMMARY OF PRINCIPAL ACTIVITIES OF STATES RELATIONS SERVICE—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
FARMERS' COOPERATIVE DEMONSTRATION WORK IN THE SOUTHERN STATES..	\$659,530	\$653,140
<p>This fund was spent for demonstration and extension work in the 15 Southern States in connection with work done with Smith-Lever funds and additional funds from sources within the States.</p>		
<p><i>Supervisor.....</i></p> <p>The Office of Extension Work in the South at Washington includes a small force of expert officers who spend a large share of their time in the field assisting in the organization and supervision of the extension work in the several States. The Washington office also prepares a variety of publications used in the extension work throughout the South. It receives and examines regular reports of work and expenditures from the field agents cooperatively employed in the States and in a great variety of ways gives advice and assistance to the extension workers throughout the South. Subject-matter specialists in horticulture, animal husbandry, soils, forestry, and marketing are employed cooperatively with department bureaus for extension work in the States.</p>	17,060	10,740
<p><i>County agent and boys' club work.....</i></p> <p>During the past year the county agricultural agents, cooperating with 120,000 farmers, conducted demonstrations on their farms with corn, cotton, tobacco, wheat, rye, oats, legumes, forage crops, potatoes, etc. Under the influence of the agents, farmers also did a large amount of work in removing stumps, drainage, terracing, spraying, purchase of improved farm machinery, and home gardening. Over 45,000 farmers were instructed in the care of manure, with an estimated saving of 10,000,000 tons; 127,000 farmers were instructed in the mixing and use of commercial fertilizers. Over 4,000 new silos and about 3,000 vats for dipping cattle were constructed. Large numbers of pure-bred animals were introduced and about 2,500,000 were treated for diseases and pests. About 2,500 community organizations of farmers were formed, with a membership of over 80,000, and, in addition, granges, farmers' unions, and church and civic organizations of various kinds cooperated in the county agent work in large numbers. The county agents made over 800,000 visits during the year, held about 12,000 field meetings, and assisted in about 900 extension schools. They also engaged, in connection with other extension workers, in a very strenuous campaign for safe farming, which resulted in a very great increase in the production of food and forage crops while keeping up a large production of cotton on land adapted to that purpose.</p> <p>About 100,000 boys were enrolled in the regular clubs in addition to 20,000 enrolled for war-emergency work. Special attention was given to the growing of corn, wheat, rye, and oats, and the raising of pigs. Short, practical courses in agriculture for club members have been provided by colleges and schools in nearly all the Southern States. These are largely attended by prize winners, whose expenses are paid. A considerable number of these boys are thus inspired to take longer courses in the colleges, and there are already a number of county agents who received their first training in agriculture in these clubs.</p> <p>All of the Southern States, except Tennessee, have negro agents, especially for work in thickly settled negro communities. This work is immediately in charge of the State agricultural colleges for whites, but the negro colleges are cooperating. On July 1, 1917, there were 66 negro men agents and 7 negro women agents. Much work which directly benefits the negroes is also done by the white agents. In the negro boys' and girls' clubs about 90,000 children were enrolled.</p> <p>The number of extension specialists in the different branches of agriculture and home economics has considerably increased in the Southern States. They are used to assist the county agents in solving difficult farm and home problems and in holding farmers' meetings, county short courses, special campaigns, etc.</p>	533,160	532,160
<p><i>Home-demonstration work, including girls' club work.....</i></p> <p>In the Southern States the women county agents carry on the girls' club work as well as demonstration work among the adult women. On July 1, 1917, 556 women agents were at work in 518 counties. They had enrolled over 1,600,000 women and girls for definite demonstration work in food production and conservation. More than 1,000 community clubs of rural women have been formed by these agents and they are also cooperating with a very large number of women's clubs and various civic and church organizations. In the month of May alone over 6,000 meetings were held, which were attended by about 240,000 people. As a part of the program, the number of home gardens on the farms was increased during the past season by over 200 per cent. There was also a very great increase in the amount of canning, drying, pickling, and brining of fruits and vegetables, and large numbers of village and city women aided in an arrangement by which more than 10,000,000 tin cans were shipped in carload lots to the South and sold at cost plus the freight and handling. Much attention was given to the making of bread with partial wheat flour substitutes, such as peanuts, soy beans, and potatoes.</p>	109,340	107,240

SUMMARY OF PRINCIPAL ACTIVITIES OF STATES RELATIONS SERVICE—Continued.

Appropriations and activities.	Allotment (Imp fund).	
	1918	1919
FARMERS' INSTITUTES AND AGRICULTURAL SCHOOLS.....	\$30,000	\$30,000
<p>..... and disseminating information about the States, aiding the institute directors and with the work and publications of the with publications, lantern slides, etc., etc. In 18 States the farmers' institutes are agriculture in 20 States they are under in a part of the extension work. In 1917, total attendance of 907,277. About 1,000 work. The publication work for the future syllabi, with lantern slides, which are syllabi and slides are also used by county cars and rural schools. They are prepared matter specialists of the bureau and are brought up to date from time to time. New syllabi were prepared during the past year on leguminous forage crops for the South and for the North, culture and storage of sweet potatoes, farm vegetable gardens, cow-testing and dairy records, public-road improvement, and practical improvement of farm grounds.</p> <p>Agricultural school work</p> <p>This fund is used for the preparation of publications and illustrative material, summarizing results of work of the department and experiment stations in form for use in secondary and elementary schools. Studies are also made of special problems relating to school instruction in agriculture. This work is carried on in cooperation with the Bureau of Education, State departments of education, and agricultural colleges (individually or through the Association of Agricultural Colleges). Arrangements are now being made looking to cooperation with the Federal Board for Vocational Education in the studies they are authorized to make under the Smith-Hughes Act.</p> <p>Agriculture is now taught in several thousand secondary schools and about 120,000 rural schools. The systematic preparation of material suitable for school use from the stores of information gathered by the department greatly aids in making such instruction practically useful, since it is prepared from the agricultural standpoint by persons trained in agriculture and pedagogy who are in close touch with specialists in the various branches of agricultural science and practice.</p>	7,500	4,000
	12,500	12,000
MAINTENANCE OF AGRICULTURAL EXPERIMENT STATIONS IN ALASKA, HAWAII, PORTO RICO, GUAM, AND THE VIRGIN ISLANDS.....	\$145,000	\$150,000
<p>Alaska experiment stations</p> <p>The Alaska experiment stations are undertaking to develop for that Territory agriculture, horticulture, and stock raising. Five stations are maintained, three being located at Sitka, Rampart, Fairbanks, Kodiak, and Matanuska. These stations are widely separated, with local conditions believed to be representative of large areas.</p> <p>At Sitka, where the general headquarters are maintained, the work consists very largely of investigations on the adaptability of fruits and vegetables and of experiments for their improvement and for the origination of new varieties by hybridization and selection. Hybrid strawberries of great promise have been produced and varieties of standard vegetables adapted to the region have been found.</p> <p>At Rampart grain and forage-plant breeding are given prominence, several hybrid barleys having been produced that are hardy, early, and good producers. Selective breeding of wheat, rye, and oats has resulted in improved strains adapted to the interior of Alaska. Hardy alfalfa are being developed, some of the hybrid strains being very promising. Work with vegetables adapted to the Yukon Valley is in progress.</p> <p>The Fairbanks station is run on a comparatively extensive scale to test the new cereals, forage plants, etc., produced at Rampart, and to demonstrate the possibilities of general farming in the Tanana Valley.</p> <p>The Kodiak station is giving attention to stock raising and has demonstrated the possibility of raising sheep and Galloway cattle on pasture and locally produced forage. Experiments have been begun with a view of producing a dual-purpose breed, by crossing Galloway and Holstein cattle, which will have the hardiness of the Galloways and the milking qualities of the Holsteins.</p> <p>Following the appropriation of immediately available funds for the establishment of a station in the Matanuska Valley, work was begun in April, 1917, on this station, which is located on land set aside for the purpose 7 miles from the junction of the Matanuska branch with the main line of the Seward-Fairbanks railroad. Some clearing has been done, the land has been prepared for planting, and a residence and barn have been erected.</p>	60,000	65,000

SUMMARY OF PRINCIPAL ACTIVITIES OF STATES RELATIONS SERVICE—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
MAINTENANCE OF AGRICULTURAL EXPERIMENT STATIONS IN ALASKA, HAWAII, PORTO RICO, GUAM, AND THE VIRGIN ISLANDS—Continued.		
<i>Hawaii experiment station</i>	\$40,000	\$45,000
<p>The Hawaii station has long conducted experiments looking to the diversification of the agriculture of Hawaii in order to prevent the occurrence of such a food shortage crisis as the islands now find themselves passing through because of a lack of tonnage and demands from other sources for mainland products. Chemical investigations, soil studies, crop work, horticultural problems, and the control of insect and fungus pests are all receiving attention. A soil survey has been made, all of the prominent types of soils on the principal islands having been investigated.</p> <p>The pineapple industry has been greatly aided and developed. Through the introduction and improvement of different horticultural and agricultural plants, a number of varieties of great value have been added to those already on the islands.</p> <p>In crop-pest control, which is receiving considerable attention, the methods suggested by the station have proved efficient. The cooperative experiment with the War Department for the production of forage for the Army animals at Schofield Barracks has been begun as planned, and a large number of plants are under trial. The station has been very active in recommending crop rotation and the use of leguminous plants for the maintenance of soil fertility, and it has been instrumental in securing many kinds of plants adapted to this use as well as to use as forage and pasture crops.</p> <p>The extension work of the station, organized in 1916 and since developed and extended as rapidly as possible, has secured important results in many localities through its contact with the farmers and its dissemination of the results of experimental and demonstration work of the station. More and better crops are being produced, and the small farmer system, as distinguished from the plantation system, is given all the aid and encouragement possible.</p>		
<i>Porto Rico experiment station</i>	40,000	45,000
<p>The work of the Porto Rico station is designed to diversify and improve the agriculture of the island. It consists largely of a study of soils, crops, pests and their control, live-stock improvement, etc., some very definite results having been obtained in soil management, employment of cover crops, use of fertilizers, improvement of coffee plantations, forage-crop production, etc.</p> <p>The station has completed a survey of the guano caves of the island, and analyses have been made and experiments carried out that show the relative values of the different guanos. This work is especially timely in view of the present high price of commercial fertilizers.</p> <p>Vegetable growing has been given attention, and the theory that vegetables deteriorate in the tropics is refuted by the results of experiments so far carried out at the station. Much difficulty is reported to have been encountered in the production of various crops because of lack of mineral nutrition, and the chemists are making studies of these phenomena, especially in connection with lime nutrition of plants resulting in chlorosis or yellowing.</p> <p>A number of new industries have been developed for the island, among them cacao and vanilla growing, beekeeping, etc. A large amount of cooperative demonstration work is in progress in connection with important crops. Extension work has been developed to some extent, especially in cooperation with island authorities.</p> <p>A campaign in bean growing conducted during the past summer led to the production of enough beans for local use and a surplus for export, whereas usually beans valued at \$900,000 are annually imported.</p>		
<i>Guam experiment station</i>	15,000	20,000
<p>The Guam station, through its plant and animal introductions, experimental work in methods of cultivation, etc., has greatly promoted agriculture in the island. Marked improvement has been reported in the live stock of the island following the introduction of pure-bred horses, cattle, pigs, goats, and chickens, and the demands for the smaller animals for breeding purposes can not be supplied.</p> <p>In connection with the campaign for improved live stock, especial attention has been given to forage production, and pastures planted with introduced grasses and other forage plants are now of frequent occurrence. Considerable attention has been given to the utilization of native feeds and forage and their value as compared with well-known standards is being ascertained.</p> <p>A study of stock diseases has been undertaken and a campaign for tick eradication begun.</p> <p>Many agricultural and horticultural crops new to the island have been introduced, some of which, as cotton, seem destined to become factors in the agricultural development of the island. Varieties of tropical fruits and vegetables either new to the island or better than those already present have been secured, and these the station is propagating as rapidly as possible, but is still unable to keep up with the demand.</p>		

SUMMARY OF PRINCIPAL ACTIVITIES OF STATES RELATIONS SERVICE—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
MAINTENANCE OF AGRICULTURAL EXPERIMENT STATIONS IN ALASKA, HAWAII, PORTO RICO, GUAM, AND THE VIRGIN ISLANDS—Continued.		
<i>Virgin Islands experiment station</i> This fund will be used to continue and enlarge the work of the station established in 1910 by the Danish Government on St. Croix. Sugar and cotton are now the principal crops, and a large share of the food used in these islands is imported. Problems needing immediate study are an examination of the underground water supplies with the view of making them available for irrigation; the investigation of the fertilizer requirements of the soil for various crops; the introduction of crops supplying fresh fruits, vegetables, and standard foods; the improvement of crops now grown, and the introduction of better cultural methods; live-stock production and dairying. In order to carry out this program, several members must be added to the station staff and provision made for the popularizing of results through extension and demonstration work.		\$15,000
HOME-ECONOMICS INVESTIGATIONS	\$35,000	30,120
This fund is used for the maintenance of the Office of Home Economics. During the past year this office has made studies on the digestibility and use of culinary and table fats, wheat flour made by the old-fashioned process, kafir, feterita, milo, buckwheat; methods of preparation of food for the table, including especially dried fruits and vegetables; potatoes and various grains as substitutes for wheat; special studies of methods of home canning of animal and vegetable products; methods of cleaning clothing, textiles, household silver; respiration-calorimeter experiments to determine the physical energy required in various household tasks under different conditions; studies of emergency rations for the United States Army and Navy and the Coast Guard Service. Studies on the preparation of fish for the table, its digestibility, and its preservation by domestic methods were made in cooperation with the Bureau of Fisheries. Dietary studies of families in the District of Columbia, as a part of the study of living conditions by the Department of Labor, were made. Technical publications on the digestibility and use of fats and grain sorghums have been published. Owing to the war emergencies, a very large amount of work was done in the preparation of popular bulletins and articles which were widely distributed. These included four Farmers' Bulletins on food selection and on fresh fruits and vegetables as conservers of other staple foods. About 100 short reports, summaries, and articles were prepared and published in the Department News Letter or otherwise. Among the subjects dealt with were Irish and sweet potatoes, turnips, beets, and other succulent roots, eggs and poultry, cereal foods, and foods rich in protein. In cooperation with the Food Administration and the Bureau of Education, 10 lessons on food conservation were prepared. General interest in the use and conservation of foods has very greatly increased the correspondence in this office and the number of personal consultations with officers of women's organizations dealing with these matters. The office has cooperated in a large way with the Food Administration and with the Women's Committee of the National Council of Defense.		
GENERAL ADMINISTRATIVE EXPENSES	15,680	15,680
This fund is used for administering the work of the States Relations Service, including the office of the director, the chief clerk, the library, and the offices dealing with publications, accounts, records, supplies, and property.		

The following tables show the number of persons connected with (1) county agent work, (2) home demonstration work, and (3) boys' and girls' club work, a part of whose salaries are paid from funds appropriated to the Department of Agriculture for regular or war emergency work and are located in the States:

TABLE I.—*County-agent work (men).*

	January, 1917: Regular.	January, 1918.		
		Regular.	Emer- gency.	Total.
SOUTH.				
Directors and State leaders ¹	28	27	.....	27
Assistant State leaders.....	.....	7	.....	7
District agents.....	46	44	22	66
County agents and assistants.....	745	631	447	1,078
Local agents (colored).....	55	56	49	105
Total.....	374	765	518	1,283
NORTH AND WEST.				
Directors and State leaders ¹	29	33	.....	33
Assistant State leaders.....	22	26	.....	26
County agents and assistants.....	438	408	601	1,009
Total.....	489	467	601	1,068
UNITED STATES.				
Directors and State leaders.....	57	60	.....	60
Assistant State leaders.....	22	33	.....	33
District agents.....	46	44	22	66
County agents and assistants.....	1,183	1,039	1,048	2,087
Local agents (colored).....	55	56	49	105
Total.....	1,363	1,232	1,119	2,351

¹ The extension directors receiving part of their salaries from department appropriations have charge of all lines of the cooperative extension work. In the Northern and Western States 31 extension directors receive no part of their salaries from department funds.

TABLE II.—*Home-demonstration work (women).*

	January, 1917: Regular.	January, 1918.		
		Regular.	Emer- gency.	Total.
SOUTH.				
State leaders.....	13	14	.....	14
Assistant State leaders.....	18	14	.....	14
District agents.....	14	17	29	46
County agents.....	425	421	328	749
Local agents (colored).....	7	10	61	71
City agents.....	.....	.....	65	65
City agents (colored).....	.....	.....	8	8
	477	476	491	967
NORTH AND WEST.				
State leaders.....	4	12	35	47
Assistant State leaders.....	1	.....	30	30
District leaders.....	.....	.....	.....	.....
County agents.....	15	25	¹ 282	307
City agents.....	.....	.....	57	57
	20	37	404	441
UNITED STATES.				
State leaders.....	17	26	35	61
Assistant State leaders.....	19	14	30	44
District agents.....	14	17	29	46
County agents.....	440	446	610	1,056
Local agents (colored).....	7	10	61	71
City agents.....	.....	.....	122	122
City agents (colored).....	.....	.....	8	8
Total.....	497	513	895	1,408

¹ 130 of these agents cover more than one county.

TABLE III.—*Boys' and girls' club work (men and women).*

	January, 1917: Regular.	January, 1918.		
		Regular.	Emer- gency.	Total.
SOUTH. ¹				
State leaders.....		19		19
Assistant State leaders.....	29	6	27	33
County leaders.....	28	27		27
	57	52	27	79
NORTH AND WEST.				
State leaders.....	29	26	2	28
Assistant State leaders.....	40	32	36	68
County leaders.....	15	78	140	218
District leaders.....			52	52
	84	136	230	366
UNITED STATES.				
State leaders.....	29	45	2	47
Assistant State leaders.....	69	38	63	101
County leaders.....	43	105	140	245
Total.....	141	188	205	393

¹ In the Southern States the men county agents supervise the boys' club work in local communities and the home-demonstration agents conduct the girls' club work.

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

BUREAU OF PLANT INDUSTRY

SATURDAY, DECEMBER 15, 1917, AND
FRIDAY, JANUARY 4, AND SATURDAY, JANUARY 5, 1918



U. S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1918

AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Saturday, December 15, 1917.

BUREAU OF PLANT INDUSTRY.

STATEMENT OF DR. KARL F. KELLERMAN, ASSOCIATE CHIEF OF BUREAU OF PLANT INDUSTRY, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. All right, Doctor, take up your statutory roll.

Dr. KELLERMAN. The first changes that occur in our statutory roll are shown in items 13, 14, and 16, which represent transfers from the lump fund, the lump-sum appropriations being accordingly reduced. The first material change in our statutory roll is with reference to our class 1 clerks. We have had so much difficulty, as all of the departments have had, in keeping clerks at low salaries that we recommend the discontinuance of nine places at \$840 and one at \$720, and converting them into seven class 1 positions.

Mr. HAUGEN. \$840 to what?

Dr. KELLERMAN. The \$720 and \$840 positions.

Mr. HAUGEN. To what?

Dr. KELLERMAN. To the \$1,200 position.

Mr. McLAUGHLIN. That is quite a jump.

Mr. HAUGEN. About a 50 per cent increase.

Mr. McLAUGHLIN. More nearly a hundred.

Mr. HAUGEN. I was speaking just in the rough; an average of from \$720 and \$840 to \$1,200.

Dr. KELLERMAN. This does not represent promotions. These \$1,200 positions are to be filled by original appointment. It is believed to be necessary merely because we are not able to appoint people to fill the vacancies in these lower salaried positions. We now have from 40 to 50 vacancies at these low salaries.

Mr. McLAUGHLIN. But, are there not many promotions, or do you take the newcomers and put them into the higher places and leave the old employees in the lower places?

Dr. KELLERMAN. That is what we have been compelled to do in many instances on account of the existing situation.

Mr. HAUGEN. I believe it is necessary to increase the salaries, but a 50 per cent increase is a pretty big jump. I would like to see it all along the line and everybody treated about alike. I think there should be a gradual increase, and we endeavored to do that a year ago by making a 5 and 10 per cent increase, but to jump from \$720 to \$1,200 is a pretty big jump.

Dr. KELLERMAN. This does not represent an increase. This represents an attempt to supply new places to which we can appoint new people.

Mr. HAUGEN. Vacancies, then, in the \$1,200 class. Is that the idea?

Dr. KELLERMAN. To create vacancies in the \$1,200 class, so that we can appoint new people.

Mr. HAUGEN. This is an increase of salary. It is one way of accomplishing the results desired.

Dr. KELLERMAN. It represents an entrance salary for competent stenographers.

Mr. RUBEY. How do you create the vacancies in the \$1,200 class; by promotions?

Dr. KELLERMAN. No; the action which we recommended here is merely the conversion of the low-salaried positions into \$1,200 positions.

Mr. HAUGEN. Jump them from \$720 and \$840 to \$1,200—to class 1.

Dr. KELLERMAN. We have about 45 vacant positions, from \$840 down to \$300.

Mr. ANDERSON. The difficulty is that these men are talking about men and you are talking about positions.

Dr. KELLERMAN. Yes.

Mr. HAUGEN. I am talking about increasing the salaries.

Dr. KELLERMAN. We are not increasing the salaries of any low-salaried men, but we have a large number of positions which are useless to the bureau because we can not get the people to accept them.

Mr. HAUGEN. What will become of the people drawing \$720 and \$840? Will they continue to draw that or go up?

Dr. KELLERMAN. We have very few people drawing those salaries, and they will continue to draw them; but these are vacancies and not people that we wish to do away with.

The CHAIRMAN. Let us see if we can not get at it a little bit better. The statutory roll fixes not only the number of places but the salaries for those places?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. For instance, last year you had 51 clerks of class 1. The law fixed the number of clerks as 51 of class 1. That carries the salary?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. Now, you want 58 class 1 places, and unless the committee gives you those places you have no authority in law to employ the people to fill them. Is that the point you are making?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. Is that clear, Mr. Haugen?

Mr. HAUGEN. Well, it is a plain device, which came up several years ago, of getting around the rules of the House, dropping out a low salary and increasing the salary. I am in favor of increasing the salary, but I do not see the justice of requiring some people to work at \$720 and putting the others up to \$1,200. If \$720 and \$840 are not adequate salaries, we ought to place the salaries where they ought to be, and it seems to me that a jump from \$720 to \$1,200 is a pretty big jump. The few who remain at \$720 and \$840 should not be compelled to continue at that salary if the salary is not adequate.

We ought to fix it at \$900 and \$1,000 and \$1,100 and graduate the salaries.

Mr. RUBEN. The proposition here, on page 49, item 24, as I understand it, where you have 11 clerks at \$840, is to drop nine of these and retain only 2 of them. You are dropping those clerks because you can not get men to work for \$840 a year, and you want the privilege of putting them in at \$1,200 a year.

Mr. HAUGEN. Then, the question is, Is not that a big jump? Should not there be some places in between at \$900 and \$1,000?

Mr. HARRISON. We will still have some places between \$720 and \$1,200. We have some at \$900, some at \$1,000, some at \$1,020, and some at \$1,080. These places Dr. Kellerman is referring to are now vacant or will be vacant before the 1st of next July, and it is proposed to fill the new positions by original appointments. The Bureau of Plant Industry will call for certifications from the Civil Service Commission and bring in new people at \$1,200, stenographers mostly, because they can not secure them for less than that amount. The Civil Service Commission has announced all over the country that stenographers can secure employment in the Government service at from \$1,000 to \$1,200 and large numbers of them will not accept less than \$1,200.

Mr. HAUGEN. I think all are agreed that nobody can come to Washington and pay the present cost of living here on \$720 a year. Have you got anybody at \$900?

Mr. HARRISON. We have 11 at \$840 and 44 clerks at \$900.

Mr. HAUGEN. How many at \$1,000?

Mr. HARRISON. Twenty-five; there are 7 at \$1,020, 1 at \$1,080, and 58 at \$1,200. We have to pay more, of course, for stenographers than we do for clerks.

Mr. HAUGEN. It will cost one to live just as much as it will for the other.

Mr. HARRISON. That may be true.

Mr. HAUGEN. At the present cost of living in Washington I do not believe anybody can live here at \$720.

Mr. HARRISON. The recommendation we have made will dispose of all the \$720 places in the Bureau of Plant Industry.

Mr. HAUGEN. But, after all, the jump from \$720 to \$1,200 seems to me to be quite a jump?

Mr. HARRISON. No promotions will be involved. We simply eliminate the \$720 places because they are vacant or will shortly become vacant.

Mr. McLAUGHLIN. It would seem to me that promotions ought to be made where they can be, instead of keeping old clerks at a small salary and bringing in new clerks and giving them the increased salaries. If you can find competent employees who have been in the department a long time, why not take them from the lower places and put them into the higher places?

Mr. HARRISON. Of course, that would be preferable, Mr. McLaughlin, but the department, and I think the Government generally, decided not to include any promotions in the estimates this year, except in the cases of a few skilled mechanics. These were discussed on the first day of the hearings.

Mr. McLAUGHLIN. Bills are pending now for increases all along the line—increases in salaries, I mean.

Mr. HARRISON. Yes, sir.

Mr. McLAUGHLIN. And of course you do not know the provisions of all of those bills, but in all probability the bills, if they should become laws, would increase the salaries of those now appointed at these higher salaries.

Mr. HARRISON. Yes, sir; they probably will.

Mr. HAUGEN. If the clerk is drawing a salary of \$720, would he be promoted to this \$1,200 grade?

Mr. HARRISON. He could be, but that is not contemplated.

Mr. HAUGEN. It seems to me that should be the policy. It is unjust to have a deserving clerk drawing \$720 if he is efficient.

Mr. McLAUGHLIN. Some of these measures increasing salaries are going to pass, and some good measure ought to pass, but it seems to me, if you know of some deserving clerks now employed at the lower salaries and you can in any reasonable way promote them that that would be the better way to do.

Mr. HARRISON. I think that throughout the department the bureaus would generally rather promote the employees already in the service than to bring in new people at higher salaries. We have suggested rearrangements of this kind many times, however, and they have been eliminated whenever a promotion was involved. Furthermore, the Government, as a whole, I think, decided not to include any promotions in the estimates, which made it necessary for us to follow the policy indicated in the estimates.

Mr. HAUGEN. The proposition of fixing and adjusting salaries is a pretty big one. I would like to suggest that Mr. Harrison and the department should formulate some plan. We are not bound by suggestions made by others, because we are going to write this bill the way we think it ought to be written, and I think that the department should try and get up some plan and submit it that would seem just and fair to all the clerks and take care of the deserving ones and those who have rendered faithful service.

The CHAIRMAN. It seems to me that the various department heads ought to appoint committees from each of them to confer on the matter of clerical salaries, and let that recommendation come to Congress here, so that whatever is done may be a uniform thing. We have our feelings here in the Committee on Agriculture about these low-grade clerks, and a few years ago Mr. Haugen and some of the older members took the bull by the horns and increased these salaries. I agree with Mr. Haugen that I do not see how a person can live on \$720 a year and support himself and a family, but I do feel that there ought to be some uniformity in getting at this business of fixing these salaries, and probably the committees of Congress could get together on the proposition and agree to something.

Mr. McLAUGHLIN. The truth is, if you refer it to the heads of departments and ask them to do something they won't do it.

The CHAIRMAN. I just throw that out as a suggestion. It might be a good idea for the members of the various appropriation committees here to get together—a few of them, the heads of several committees—and confer over this matter and find out what the policy is going to be, because it would eliminate a great deal of work on these statutory rolls.

Mr. HAUGEN. It seems to me that Mr. Harrison or some one in the department could go to all of these bureaus and say, "How many

clerks have you? How many at a certain salary? How many are deserving of increase?" and he can submit that to this committee, and we can determine what should be done. If we find that there are 100 clerks drawing \$720 that the heads of the bureaus think ought to have \$840 or \$900, or whatever it may be, then it is for the committee to decide, and then we can determine the matter more satisfactorily and more justly than we can by dealing with these various bureaus separately.

Mr. HARRISON. We did that last year in the case of the meat-inspection employees, at the request of the committee, but the committee did not act, on account of the 5 and 10 per cent increase provision. Of course, we are confronted with the difficulty of not knowing what Congress will do with reference to the general increase.

Mr. McLAUGHLIN. There is going to be some trouble. There is going to be a general increase.

Mr. HARRISON. The point you raised about the new employees coming in at the higher salaries and also receiving additional compensation which would be authorized by any general provision was considered last year, and a provision was inserted in our bill which meets the situation to some extent. We put in a limitation that only those on the rolls of the department the preceding June should share in the 5 and 10 per cent increase, so as to insure that the new people coming in during the course of the year should not share in the increased salary and so as to have the provision apply only to those who had been in the service for some time.

Mr. HAUGEN. You also remember that this committee held off action until it was finally determined what Congress would do in that respect, and it was just a question whether we would grant the increase or add a 5 and 10 per cent.

Mr. HARRISON. I was just referring to the things that the committee would have to bear in mind in making up the bill for this year.

Mr. McLAUGHLIN. Don't you think it would be a good idea in considering these bills for general increases to insert that limitation?

Mr. HARRISON. I think so; undoubtedly, if a feasible provision could be worked out.

Mr. McLAUGHLIN. The same as it was put in the Agricultural bill a year ago?

Mr. HARRISON. It is really unfair to those employees who have been in the service for some time merely to receive a horizontal increase and also to allow the new employees who are coming in at the higher salaries to get the additional compensation.

Mr. McLAUGHLIN. I wish that general increase bill could be passed before we had to consider this appropriation bill.

The CHAIRMAN. I was about to suggest that, if I have a little time some day, I will try to confer with the chairmen of the various appropriation committees here and probably the Speaker also and find out whether there has developed any general policy about the matter; and very likely, if there has not, there will be a general policy before we come to make up this bill. We are hitting in the dark, I realize that, until we know what the policy of the House is going to be, because we can carry any bill with these increased salaries, and one man's objection will carry it all out and you practically have to rewrite the bill on the floor of the House.

Mr. HARRISON. You remember last year we included in the estimates an unusually large number of increases, with the specific intention of making promotions all down the line, but they were not approved. The committee eliminated them after the 5 and 10 per cent provision was inserted. That is the reason why we put in the estimates the specific statement that the new places will be filled by original appointment, so as to eliminate the difficulty that the committee encountered last year.

Mr. RUBEY. But you do make promotions, do you not? For instance, if a \$1,400 position becomes vacant, you fill that from the lower-grade positions?

Mr. HARRISON. Yes, sir; in the course of a year. It is the policy of the department to promote the employees already in the service whenever it is possible to do so. Of course, it frequently happens that where a high-grade man resigns and we have no one in the department qualified to take his place, we have to secure some one from the outside with the proper qualifications and appoint them at the same salary paid the employee leaving the service.

Mr. RUBEY. But if you have a man there who can fill the place, you give him the place?

Mr. HARRISON. Yes, sir. When a bureau recommends the appointment of an outside man we frequently send the recommendations back and inquire whether there is not some one in the bureau who could be promoted to the position.

Mr. ANDERSON. I would like to ask Mr. Harrison this question. No distinction is made in the estimates or in the law between stenographers and clerks. Is there a relative increase in stenographers as compared with clerks who are not stenographers?

Mr. HARRISON. You mean in the number?

Mr. ANDERSON. Yes.

Mr. HARRISON. Yes, sir. Throughout the department. In a department like the Department of Agriculture, we need stenographers more than we do clerks. That is not true, perhaps, in the Treasury Department, where they have so much purely clerical work, but the great majority of our clerks are stenographers.

Mr. ANDERSON. That would account to some extent for the policy of dropping the lower-grade places and increasing the number of clerks and stenographers in the higher grades?

Mr. HARRISON. It does. I may say that many of these clerks at \$840 and \$900 are not stenographers. They are merely performing routine clerical work.

Mr. HAUGEN. And, after all, they may be just as efficient and just as valuable to the department as a stenographer?

Mr. HARRISON. That is true, but a stenographer usually commands a higher salary. Those doing purely clerical work may be rendering exceedingly valuable service to the department, but a stenographer is considered, to a certain extent, a technical man. It requires training in his particular line, whereas a clerk does not require such training. The latter usually comes in with a high-school or a common-school education, and he is able to do routine clerical work. A stenographer must go to school, in addition to that, to study stenography and typewriting.

Mr. HAUGEN. Two or three months will do it.

Mr. HARRISON. We can not get stenographers at the lower salaries, but it is not so difficult to get clerks.

Dr. KELLERMAN. Yes, sir; that is true.

Mr. HAUGEN. After all, I think you have to leave it to the judgment of the Secretary of Agriculture, who is in a position to know. I am going to renew my suggestion that Mr. Harrison, or some one in the department, work out a plan and give us the judgment of the department with reference to these positions. I do not think we need be bound by any suggestions made by other committees or anything of the kind. We would then have the benefit of the judgment of those who are able to know.

Mr. HARRISON. I shall, of course, be very glad to do whatever the committee wishes. It may be well to know in advance, however, what the general policy is going to be with reference to horizontal increases.

The CHAIRMAN. Yes; I think so.

Mr. HARRISON. All the work otherwise might go for naught, although we are perfectly willing to do it.

The CHAIRMAN. I think we had better defer the statutory-roll consideration all along the line until after the holidays. In the meantime, we can think about it more carefully.

(After informal discussion, at 12.10 o'clock p. m. the committee adjourned, to meet again at the call of the chairman.)

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Friday, January 4, 1918.

The committee met at 10.30 a. m., Hon. A. F. Lever (chairman) presiding.

The CHAIRMAN. The committee will come to order. Dr. Kellerman, are you ready to proceed with your statement?

Dr. KELLERMAN. I think so, sir.

STATEMENT OF DR. KARL F. KELLERMAN, ASSOCIATE CHIEF OF BUREAU OF PLANT INDUSTRY, UNITED STATES DEPARTMENT OF AGRICULTURE—Continued.

The CHAIRMAN. We had finished the statutory roll. I believe we agreed to defer consideration of the statutory roll, for the time being at least. Take up your lump-sum appropriations, Doctor, on page 52 of the estimates. Your first item is No. 71 for investigations of plant diseases and pathological collections, including the maintenance of a plant-disease survey, with an apparent decrease in that item of \$480 due to a transfer. There is no real change in that item?

Dr. KELLERMAN. There is no change in the item.

The CHAIRMAN. Doctor, give us, just as briefly as you can under each of the items, an outline of the work and tell what progress you have made this year and what are your plans for the next fiscal year.

Dr. KELLERMAN. Under this item the bureau has been conducting two general kinds of investigation—first, the technical investigations of new plant diseases, especially the diseases caused by bacteria. The

most notable work of the year has been the discovery of a rather widespread bacterial disease of wheat, which, while not exceedingly destructive in its effect in any one field, lowers the total yield of the wheat crop. It appears to be certain that the disease is carried on the seed, and in this way is constantly being carried to new localities. It is probable that the disease can be almost completely controlled by the careful selection of seed wheat. The planting of the shriveled kernels, which is in general a bad plan anyway, is especially bad in reference to this disease because we have found the shriveled kernels frequently infected, whereas the plump kernels never are infected.

The plant-disease survey has been a comparatively new organization. We have attempted to get a more general survey of the condition of plant diseases throughout the country by means of a specially organized survey. In cooperation with all the State experiment stations and with many outside cooperators we expect to have regular reports of the occurrence of any unusual plant diseases that would be susceptible of prompt eradication or control. Through these means we hope to be able to take care of the crop situation more and more effectively as time goes on and to organize our control and prevention of diseases on a somewhat sounder basis. The work has been especially useful this year in showing that one of the oriental corn diseases which had caused us a great deal of concern because of our knowledge of its serious effects in the Orient is comparatively harmless in this country. We had found the disease about 18 months ago in one or two places in the South and were apprehensive lest a general epidemic of this particular corn disease might cause serious damage throughout the corn belt. The survey shows the disease widely prevalent and of no great significance throughout the corn belt.

Mr. RUBEN. What do you call that, Doctor?

Dr. KELLERMAN. That is the Physoderma disease.

Mr. LEE. What do you call the shriveled wheat?

Dr. KELLERMAN. That is called the black-chaff disease. As yet no name has been given the bacterium causing it.

The CHAIRMAN. If there are no further questions, take up your next item, No. 72, for the investigation of diseases of orchard and other fruits, \$73,935, provided that \$8,000 of said amount shall be available for the investigation of diseases of the pecan. There is an apparent decrease of \$480 in the item due to a transfer. Suppose you tell us briefly about that.

Dr. KELLERMAN. The work carried on by the bureau under this item relates to the protection of orchard crops against various fungous and bacterial diseases. These methods of control are in most cases sprays. The investigator determines the course of a disease in the orchard and determines at what time sprays will be effective in controlling the disease and what sprays will be the most satisfactory. Annually the losses from diseases in orchards are very large. There is, however, one phase of the work that is a little bit different from the ordinary type of work. We find that by proper ventilation of the storage houses the apparent scalding which occurs very frequently and which has been a very mysterious kind of trouble can be prevented. By comparatively minor modifications of storage methods, therefore, it appears that losses which heretofore have been considerable every year can be almost completely, if not completely, prevented.

The CHAIRMAN. Doctor, is it necessary to set aside this \$8,000 for the pecan study or could we cut that proviso out and leave the amount the same?

Dr. KELLERMAN. I think it is better to omit the proviso. The work will be practically the same in either case, but the limitations of the proviso might prevent the slight shifting of the work if the developments during the year would render that exact expenditure impracticable.

The CHAIRMAN. What progress are you making in your pecan studies? I take it to be comparatively new work, and the appropriation for carrying it on has been set aside in this bill very recently.

Dr. KELLERMAN. The diseases are being carefully studied. The methods of control are in the formative stage, so that it is rather difficult to make a very satisfactory report at this time. I think, however, there will be little difficulty in controlling all of the important diseases of the pecan.

The CHAIRMAN. Is the area in pecans being very rapidly extended?

Dr. KELLERMAN. That is being rapidly extended.

The CHAIRMAN. All right.

Mr. YOUNG of North Dakota. Where is this labor employed?

Dr. KELLERMAN. The greater portion of the labor is employed in the field at the time of spraying work.

Mr. YOUNG of North Dakota. This man at \$480, where does he work?

Dr. KELLERMAN. Off-hand, I could not say. It is probable that he lives somewhere in Virginia and works at the Arlington Farm, but I would have to look up the records in order to make sure of that.

Mr. YOUNG of North Dakota. Have you any men connected with your work living here in the city at that wage?

Dr. KELLERMAN. Yes: both laborers and messengers.

Mr. YOUNG of North Dakota. Married?

Dr. KELLERMAN. Some of the laborers undoubtedly are married.

Mr. YOUNG of North Dakota. They can hardly live on that salary, can they?

Dr. KELLERMAN. It seems to me it would be very difficult.

Mr. ANDERSON. I should like to ask a question which perhaps ought to be directed to the Secretary of Agriculture, as it is a general question. Has there been any change in the department or in your bureau as a result of the war. What I mean is, are you following the same line of investigation, experimentation, etc., as you did prior to the war?

Dr. KELLERMAN. I think I could fairly answer that. It is understood throughout our bureau to be the Secretary's desire that we shape all our work to meet the war needs of the country, and the work of the bureau has been shaped that way as far as seems practicable.

Mr. HARRISON. That is true throughout the department. Mr. Anderson. The Secretary has asked the bureau chiefs to redirect their work wherever it is feasible to do so and to devote their energies more and more to problems having a bearing on the war situation. Of course, there are many regular lines of activities which we are continuing and which we have to continue because they involve the enforcement of laws, for instance, the foods and drugs act.

Mr. ANDERSON. I understood that. I think you have answered the question so far as it can be answered in a general way. It has seemed to me that it is desirable to concentrate the activities of the department, so far as it could be done, upon the problems that relate to the war and upon problems that offer immediate results.

Mr. HARRISON. We are doing that as far as possible. At the same time, it would be unwise in many cases to throw away the results of several years' work by discontinuing some of our scientific studies. The Secretary, in calling for the estimates, made it clear to the chiefs of bureaus that he would not consider increases in appropriations unless they have a direct bearing upon the present emergency.

Mr. ANDERSON. Of course, I understand and I can see very readily that there is experimental work which has to run over a long period of time which it would be wasteful to discontinue. I merely wanted to ask the question, so that it would be in the record as to whether the general policy of the department was to direct its attention to the problems of the war.

Mr. HARRISON. Many of the experts of the department have been diverted from their regular tasks and assigned to emergency problems.

Mr. OVERMYER. And by reason of the war, your helpers are now reduced to a smaller force than heretofore?

Mr. HARRISON. Yes, sir; at the same time we have had to expand in many directions.

The CHAIRMAN. If there are no further questions that any members wish to ask, take up item 73, "for conducting such investigations of the nature and means of the communication of the disease of citrus trees, known as citrus canker, etc." Tell us something of that work, how you are getting along, and whether you hope to be able to discontinue this work at some reasonable time in the future?

Dr. KELLERMAN. The progress of the canker eradication campaign during the past year has been, in general, very satisfactory. There have been certain difficulties, largely those caused by tropical storms. We find that any time a severe tropical storm goes through the Gulf region, where there are infected trees, the rain becomes infected, and the strong wind blows the infected water for considerable distances and infects new healthy trees. Aside from this difficulty, the progress of the work has been greatly in excess of my estimates.

The Florida conditions are especially favorable. During the past several months there have been very few infected trees found in the entire State. That may sound somewhat more favorable than it really is, because a large number of our inspectors enlisted, and accordingly our inspecting force is now smaller than it has been for two years.

The Florida Legislature passed a bill appropriating \$300,000 for cooperative work with the department—that is, \$150,000 for this year and \$150,000 for next year—so that the funds for working in that State have been ample. We have been forced to economize in all of the other States, and that coupled with the hurricane conditions has made it impossible for us to get such effective control of the disease.

In Alabama, however, and in Georgia I think the conditions are almost as good as they are in Florida. There will be few, if any, trees found infected during the coming spring if we can maintain our work's present efficiency throughout the winter. In Mississippi,

Louisiana, and Texas, the weather conditions have made the control more difficult, and we will probably have a few years of hard work.

We are carrying on supplementary experiments in the Philippines, where we had an opportunity for spray control work without danger to the adjoining citrus properties, since the citrus canker is widely spread in the Philippines.

It appears that certain spray combinations will very greatly aid in the control campaign. The destruction of trees will be greatly reduced, and the possibility of a recurrence of the disease will also be reduced.

I think, therefore, that the citrus-canker campaign is at present in a very satisfactory condition and that another year's very hard work, and possibly somewhat more desultory work afterwards, will rid us of this particularly dangerous plant disease.

The CHAIRMAN. About how much of this fund do you spend in the Philippines?

Dr. KELLERMAN. About \$3,500.

The CHAIRMAN. You just have a specialist over there?

Dr. KELLERMAN. A single specialist, who is given facilities for work by the Philippine bureau of agriculture. The citrus plantings of the Philippine bureau have been put at our disposal for our bureau work, so that there is no expense at all except the salary of the one expert and the necessary labor that he must employ in taking care of the experiments and the cost of the various spray materials that are used.

The CHAIRMAN. Last year you had available \$430,000, \$180,000 of which was immediately available. How much did you actually spend of that amount?

Dr. KELLERMAN. Of the \$180,000 about \$175,000 was spent during the period between the passage of the bill and the beginning of the following fiscal year. Of the remaining twelve or fifteen thousand, approximately half will be expended before this July if no special demands arise for increase in the work.

Mr. JACOWAY. If the plan which the Department of Agriculture has outlined is carried out successfully, will not that give the United States what practically might be termed a corner on citrus fruit? In other words, has not this disease got so advanced in other countries that it has practically destroyed the entire industry in those countries?

Dr. KELLERMAN. This disease, if unchecked, will destroy the round orange and grapefruit industries. It is an open question whether it will be so serious in Japan. In addition, the Satsuma orange is somewhat more resistant than the round orange, and the climate of Japan is cooler. There is a tendency, though, on the part of countries generally, now that they have recognized the seriousness of this disease, to quarantine against any country where citrus canker is prevalent. Accordingly, from a commercial standpoint, the country that is infested is, at the present time, cut off from its market to a very great degree. The Mediterranean region, however, has never been infested with citrus canker, and that has been the chief region for the production of oranges for Europe and for the production of lemons for this country. Accordingly, one of the largest citrus regions in the world is still free of canker.

The CHAIRMAN. Take up item 74, for the investigation of diseases of forest and ornamental trees and shrubs, including a study of the nature and habits of the parasitic fungi causing the chestnut-tree bark disease, etc. There seems to be no change in that except an apparent decrease by way of transfer.

Dr. KELLERMAN. No change in the work.

The CHAIRMAN. Briefly, Doctor, tell us about that item.

Dr. KELLERMAN. The greater portion of the work under this item is carried on in close cooperation with the Forest Service. The control of various diseases of forest trees is especially important in forest operations and is also important in lumbering operations. For example, there are certain types of decay of spruce and fir, especially, that in the ordinary methods of inspecting lumber are not recognized. These types of decay greatly weaken the wood, making it only about half as strong as wood that is not affected by what we call advance decay, and yet for certain structural purposes, where the full strength of the timber is necessary, the timber is practically valueless. That is one small example of the type of technical work that we are carrying on to aid in forestry work. We try to modify the forestry methods—to reduce the number of destructive fungi that grow readily. This work led to the establishment of the forest sanitation clause that is now enforced by the Forest Service. All these types of investigation are carried on under this project.

The CHAIRMAN. I notice that you are still doing some work on the chestnut-bark disease. That is purely scientific work, is it not? There is no effort to control the disease as you undertook some years ago?

Dr. KELLERMAN. No such effort at the present time is being carried on. In fact, the greater portion of the work on the chestnut-bark disease at the present time is devoted to the breeding of chestnuts resistant to this disease. Very satisfactory progress has been made in this line, and we now believe that we have a chestnut that, so far as nut production is concerned, is as satisfactory as the American chestnut, as sweet and as generally attractive, without being susceptible to the chestnut-bark disease. We have as yet no chestnut lumber tree that will take the place of the native chestnut.

The CHAIRMAN. There is also included under this item a study of the disease of the white-pine blister rust, and also on the next page, in the next item, you have a control proposition of white-pine blister rust. Distinguish between those two kinds of work.

Dr. KELLERMAN. The study of the white-pine blister rust was undertaken several years ago, and this authority for the investigation of that disease was included at that time. At the present time the distinction between the two items is that the technical investigation of the fungus, its method of growth, its method of spread from the purely technical standpoint, such as the possibility of its overwintering under various conditions, and similar technical laboratory studies are carried under this item. All of the fieldwork looking toward the control of the disease in the forests is carried under the following item.

The CHAIRMAN. Any further questions on that, gentlemen? If not, take up item 75, Doctor, for the eradication or control of the white-pine blister rust. There seems to be some changes in that item.

Please give us some idea of the progress you are making and to what extent you ultimately hope to be able to really control this disease.

Dr. KELLERMAN. The control of the white-pine blister rust has been satisfactory in certain particulars. It has not been quite as satisfactory as might have been hoped in others. The work was undertaken in the hope that it might be possible to so organize the eradication of the diseased pines and of the other plants on which the blister rust occurs, especially gooseberries and currants, that the disease could be eradicated even from the regions in which it is now most widely spread.

During this season we have been unable to find any trace of the disease in the Western States in the large pine forests. In those places the occurrence of the disease would have been a very serious menace to a very great national asset. Our scouts have been going through all the places where five-needle pines occur, and up to the present time no trace of this fungus has been found. We believe, therefore, that the farthest western extension of the disease is in Minnesota. Here the disease has spread into some of the native pine, and in cooperation with that State, measures have been taken which we believe will result in its eradication. In Ohio and Pennsylvania the disease has been brought in in nursery stock and has spread in some cases to native pine, but here again control measures have been undertaken that should be successful.

In general, it appears that east of the Hudson River the disease is so widely prevalent that it would be a hopeless task, or rather an impracticable task, for us to eradicate it. The disease can only be eradicated there by the eradication of currants, and the cost of adequate inspection to find all wild currants as they develop and to immediately eradicate them appears prohibitive. There is, however, the probability that in many regions in New England it would be economically worth while to expend the time and energy necessary to eradicate the currants and in this way make pine growing possible. White-pine growing appears to be very desirable in some areas of New England where it is not practicable to shift to some other basis of production. We are planning during the coming year, instead of continuing the investigation of the feasibility of complete eradication throughout New England, to test carefully the feasibility of cleaning certain areas to a sufficient degree to make lumbering operations satisfactory and profitable. This will make possible a considerable reduction in the funds necessary for handling the New England work, and therefore it will be possible for us to decrease the total recommended for this item. We can handle all of the western work, the scouting work on the present basis, the eradication in the Middle States, including New York and Pennsylvania, and the testing out of the eradication of currants over small areas in New England for \$230,000.

The CHAIRMAN. You can reduce this fund, then, about \$16,000?

Dr. KELLERMAN. A little over \$16,000. I feel confident that that reduction will not interfere with the successful conduct of the work as we believe it is necessary to plan it for the coming year.

The CHAIRMAN. You could not scale that down a little more, could you, Doctor?

Dr. KELLERMAN. That is somewhat of a question. I doubt whether we could. That is about the figure on which I would like to estimate.

The CHAIRMAN. If you think that you can reduce it any further without any detriment to the work, I wish you would let us know about it in time. We want to give you all that is necessary to carry on the work effectively, and at the same time we want to carry as small an appropriation as possible. Your plan seems to be now to test out the proposition to see whether or not it would be profitable, from a lumbering standpoint, in limited areas, to get rid of the currants and the gooseberries, which are the host plants of this disease, as I understand it?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. And that is largely a matter of demonstration to the owners of white-pine timber?

Dr. KELLERMAN. Yes, sir; that is our purpose.

The CHAIRMAN. And when you have made that demonstration, that work can cease?

Dr. KELLERMAN. That work can cease entirely.

The CHAIRMAN. You have made up your mind that complete eradication is an impracticable proposition in this area east of the Hudson River?

Dr. KELLERMAN. Yes.

The CHAIRMAN. But I take it that west of the Hudson River, in Ohio and Pennsylvania and Minnesota, where the outbreaks are limited, it may be possible to wholly eradicate it from those areas. Is that your theory?

Dr. KELLERMAN. Yes.

The CHAIRMAN. I take it that you have a very strong quarantine against the white-pine blister rust?

Dr. KELLERMAN. For all western shipments.

Mr. ANDERSON. The disease is not distributed except by transportation of nursery stock from one point to another?

Dr. KELLERMAN. That has been the chief method of wide distribution, but, one introduced into a pine-growing area, the greatest danger is the spread from a diseased pine to currants and back to other pines.

Mr. ANDERSON. Would there be any possibility or any likelihood of the disease being transmitted or transferred from east of the Hudson River to other sections of the country except through nursery stock?

Dr. KELLERMAN. There is practically no chance. There is a theoretical possibility of it, but if we could control the shipments of diseased pine and diseased currants westward, I think there is no danger of its spread.

The CHAIRMAN. At what period of the year does this disease make its travel from the currant to the white-pine tree? I guess that information is in the record of former hearings, but I have forgotten it.

Dr. KELLERMAN. On the pine the fungus fruits and scatters spores from about the middle of April to the end of June. At any time during that season the disease may spread from the pine to the currant. During that stage of the disease it can spread from currant to currant, so that in very wide areas the currants may become very

rapidly infected. During the latter part of the same season the disease may spread immediately back to pines.

Mr. OVERMYER. I think it is optional with the Secretary of Agriculture to require the State and private organizations to meet the appropriations made by the department. Do you know to what extent has that been done?

Dr. KELLERMAN. That has been actually a requirement. The States have met the expenditures of the department in all cases except the western scouting where the national forests were involved, and that has been counted a departmental undertaking.

Mr. JACOWAY. Doctor, has not this disease been started more from stock shipped for landscape gardening than in any other way, especially in Pennsylvania?

Dr. KELLERMAN. In the last few years it is difficult to say whether it has spread more that way than it has by the shipping of diseased currants.

Mr. JACOWAY. You have had a great deal of trouble along that line with nursery stock?

Dr. KELLERMAN. Yes; we have had trouble both ways. Originally all of the trouble came from the infected pine trees, of course, because the disease is one introduced from Europe. The first heavy introductions of the disease were brought in on trees introduced for timber planting.

Mr. ANDERSON. Is there much interest taken in this matter by the authorities and the individuals in the various localities? Do they respond freely in contributing an amount equal to your own?

Dr. KELLERMAN. Yes; in the white-pine-growing States there is very much interest in this matter.

Mr. ANDERSON. You have no authority to spend any money except to match an equal amount put up by the States or by the authorities?

Mr. OVERMYER. This is discretionary with the Secretary of Agriculture, as I read it. That is why I asked to what extent these contributions were being made.

Mr. JACOWAY. Have you ascertained how many million feet of lumber have been affected by this disease all over the United States?

Mr. KELLERMAN. There have been estimates made, but offhand I could not quote them. I think, however, it would be rather unfair to give those estimates as showing the injury of the disease, because primarily the injury has been the destruction of young timber plantings, which have as yet no real timber value, and many such young planting exist throughout the East.

Mr. JACOWAY. What is this timber worth, standing in the tree, in close proximity to a railroad where the transportation facilities are good?

Mr. KELLERMAN. I am afraid I do not quite understand the question. Do you mean the timber that is diseased?

Mr. JACOWAY. No; the timber that is not diseased. What is a thousand feet of this timber worth in a tree where it is not diseased? In other words, is it as great as yellow pine?

Mr. KELLERMAN. This is all white pine.

Mr. JACOWAY. I understand. But what is the value of a thousand feet of it standing in the tree close to a railroad where the transportation facilities are good?

Mr. KELLERMAN. That is a question that I think a lumberman would have to answer. The prices for white pine are close to those for hardwood. So aside from knowing that they are high I would be unable to give you figures.

Mr. JACOWAY. Would not it be somewhere like \$8 or \$10 standing in the tree? That is what I am trying to get at.

Mr. KELLERMAN. I think it would be something like \$8, but I would hate to guarantee that figure. I could insert a figure in the record, if you want that figure to appear there.

Mr. JACOWAY. I would like for you to do that, if you can do it readily.

(The statement referred to follows:)

EXTENT AND VALUE OF WHITE-PINE TIMBER IN THE UNITED STATES.

There are no accurate figures showing the amount of white-pine timber throughout the United States. The Forest Service has furnished the following tentative estimates:

In the eastern and northeastern United States there are approximately 15,000,000,000 board feet of white pine, partly second growth, probably worth \$75,000,000; in the Lake States approximately 12,000,000,000 board feet, largely old growth, worth about \$100,000,000; in the intermountain district, especially Idaho and Montana, 30,000,000,000 board feet, probably worth from \$75,000,000 to \$100,000,000; in California, about 34,000,000,000 board feet, worth from \$70,000,000 to \$90,000,000.

The variation in value is due to difference in proximity to transportation and variation in length of transportation to regions where used. The prices of high-grade timber in the East near transportation therefore would probably run close to \$10 per thousand, lower prices, of course, being in effect for less valuable timber. Throughout this region small timber is used especially for box manufacturing, while length of transportation from the West renders the small timber of that region worthless.

The CHAIRMAN. Take up No. 76, for the investigation of the diseases of cotton, potatoes, truck crops, forage crops, drug and related plants, of which sum \$5,000 shall be immediately available. There is no change in that item except to strike out the words "of which sum \$5,000 shall be immediately available." Why was that made immediately available, Doctor? I do not recall.

Dr. KELLERMAN. It was considered especially important to undertake some emergency work in the South with reference to the tomato crop especially, and it was necessary to start the work at once, without losing practically a year's time in getting the work underway.

The CHAIRMAN. Yes; I recall that now. Briefly, what are you doing with this appropriation and what do you expect to do with it next year?

Dr. KELLERMAN. The general control of the truck-crop diseases and of the cotton diseases also is the purpose of this item. The work during the past year has been devoted primarily to beans, tomatoes, cabbage, potatoes, and, to a less degree, cucumbers and sweet potatoes. There have been many special diseases worked out and methods advised for their control, such as the methods for the control of the watermelon stem-end rot, which has heretofore caused heavy loss. Probably at the present time the most important work carried on is in relation to the potato, such as information as to methods and time of spraying for protection against blight and advice regarding the storage of potatoes to avoid the various storage rots. During the year several special advisers have been placed in

the field to bring to the county agents the details of the latest and best methods for protecting these important crops against both the diseases that were likely to occur in the field or from careless handling during harvest.

Mr. HUTCHINSON. You speak about the potato blight. What do you advise as a remedy for that disease?

Dr. KELLERMAN. To a large degree that can be prevented by the use of a copper spray.

Mr. HUTCHINSON. We tried it in our section and we have not been able to do anything with that. It seems to me the dew and the sun cause the disease, and I do not see how spraying can control it.

Dr. KELLERMAN. There are several diseases that cause heavy damage to the potato crop, and there is a possibility that it is some other disease that may be responsible for your trouble instead of the ordinary blight. Late blight is caused by a fungus, and if the plants are sprayed at the right time the disease is not particularly hard to control. There are other diseases, such as mosaic, and there are certain fertilizer troubles that are very destructive in their effects.

Mr. HUTCHINSON. Which way do you mean? That interests me.

Dr. KELLERMAN. Fertilizer troubles are reported on certain kinds of soil. This seems to be true only on certain types of clay soils. The fertilizers used during the past year have not given the proper development of the potato.

Mr. HUTCHINSON. That is due to the lack of potash, is it not?

Dr. KELLERMAN. That is what we interpret that trouble to be.

Mr. HUTCHINSON. There is no doubt about that.

Dr. KELLERMAN. The mosaic troubles are not well understood; just as in the case of the tobacco mosaic, it seems to be a trouble that is infectious, but the exact cause of the trouble and the methods of control are in doubt. Rotation of crops seems to be necessary.

Mr. HUTCHINSON. You do not consider a lack of potash a disease?

Dr. KELLERMAN. No; not a disease in the usual sense, but the plants weakened in that way give low yields and are more susceptible to diseases.

Mr. HUTCHINSON. It would be a wonderful thing if we could get something that would stop the blight?

Dr. KELLERMAN. Have you also treated your seed potatoes?

Mr. HUTCHINSON. Yes; we have done everything that the Government and also the State department recommends, and it does not seem to stop it. You see a patch of potatoes in a fine condition and in a few days it is practically gone.

Dr. KELLERMAN. Late blight should be controlled to a very great degree by spraying. Whether there is some additional trouble that is hurting your particular section is something I do not know.

The CHAIRMAN. If there are no further questions, take item No. 77, investigations of the physiology of crop plants and for testing and breeding varieties thereof.

Dr. KELLERMAN. There is no change in that item.

The CHAIRMAN. And your work under that item, I presume, is practically the same as it has been?

Dr. KELLERMAN. It is practically without change excepting that some attention is being devoted to the introduction of certain oriental citrus plants that are probably resistant to citrus canker. What we

are anxious to do is to develop a stock that is not susceptible to citrus canker, that can be used especially in the Satsuma orange district, in place of the *Citrus trifoliata* stock, which is susceptible to canker.

The CHAIRMAN. All right. No. 78, for soil-bacteriology and plant-nutrition investigations, including the testing of samples procured in the open market of cultures for inoculating legumes, etc. There is no change in that item?

Dr. KELLERMAN. There is no change in the item. I think the committee has been familiar with this work for some time. The distribution of cultures for legume crops has been continuing and has been especially satisfactory during the past few years. The cultures have been increasing the growth of the legume crops on which they have been used, and in that way they have aided in the extension of those crops and have reduced the necessity for nitrate fertilizer.

The CHAIRMAN. Take up the next item, No. 79, for soil-fertility investigations into organic causes of infertility and remedial measures, maintenance of productivity, properties and composition of soil humus, etc. That used to be in the Bureau of Soils, as I recollect it.

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. All right.

Dr. KELLERMAN. The work has been the investigating of the various compounds that occur in different types of soil, with especial reference to the possibility of these compounds being responsible for either the fertility or the lack of fertility of the different soils. At the present time special attention is being devoted to the investigation of the types of soil that seem to be the most susceptible to the lack of potash, especially for potato growing.

The CHAIRMAN. Any questions, gentlemen? If not, take up item 80, for acclimatization and adaptation investigations of cotton, corn, and other crops introduced from tropical regions, etc. You seem to have an increase of \$25,000 in that item to establish a cottonseed breeding station at Greenville, Tex. How many of such stations have you now, Doctor?

Dr. KELLERMAN. There are no special stations for this purpose at the present time. We have been doing work of this general character in the Salt River Valley, in connection with the Egyptian-cotton development in that section, which is now very successful.

The CHAIRMAN. Suppose you tell us about this station that you wish to establish. The note is rather full on it, but you may have something else to say.

Dr. KELLERMAN. The need for this station has, to us, become more and more apparent as our work has progressed, and as it has become clear that greater return to the cotton planter can be secured by the use of the best kinds of the cotton varieties and by using the best kinds of cotton seed than through any other one channel. We have also found that, although it is possible to develop new kinds of cotton varieties, the persistence of these varieties has been largely a matter of chance. If a good variety of cotton is developed and distributed it almost immediately becomes mixed in the field, first by cross-pollination with other less desirable types of cotton, and then later the seed is likely to become badly mixed with various kinds of cotton in the cotton gin, so that the "life" of any kind of cotton

variety is likely to be short. What we have felt the need of, therefore, is the establishment of some kind of a center for stimulating the general community interest necessary in the development, first, of the different varieties that will be needed, and, second, of the production of adequate quantities of seed of these varieties for solid planting of large areas with a single variety.

Mr. JACOWAY. Has this whole matter not been tried out by a county in South Carolina, where the farmers used just one kind of cotton seed, where they all cultivate alike, and where the finest kind of results have been obtained?

Dr. KELLERMAN. That is the desirable thing to do, but I think you have a cooperative marketing organization in mind that is getting good prices, but not making improvement in the cotton. In this cotton district in question we have felt that there was an opportunity to make a clear demonstration that it was worth while for the cotton growers to build up a seed supply and develop sentiment among the cotton growers throughout a large section of the country instead of a small section. The organization of small committees is a possibility, but it takes much time and energy to do that, and the small community is, after all, always at a disadvantage, because it is surrounded by much larger communities that are not taking the necessary precautions in protecting their seed supply, and also the market buyers in the small communities are not always appreciative of the small lots of good-grade cotton, although they always are of large lots of good-grade cotton. It is more a question of expediency than anything else. This appears to us to be the best way of making a satisfactory demonstration of how a seed supply of a good type of cotton can be developed and maintained and will benefit a very large area of cotton-growing country.

The CHAIRMAN. Have you any stations of this character for corn or for wheat or oats?

Dr. KELLERMAN. Not exactly of this character. We have a good many stations for corn development, for wheat development, for all of the cereals, for the forage crops, and we have other small stations widely scattered throughout the country.

The CHAIRMAN. I asked the question because this seems to be a departure from the practice of the department in that it contemplates the erection of buildings and what seems to me a permanent station here with considerable overhead expense and charges. I recall that in my own district many years ago Mr. Weber had a station there, but he had no buildings. He cooperated with some successful and practical, careful farmer and developed some very satisfactory results. That is true also now at Hartsville, where you cooperate with Mr. Coker. It has occurred to me that you propose starting out on a policy which would result in the establishment here and there all over the country of these special stations with heavy overhead expenses and a good deal of original investment in them, and I think it is a question of policy that the committee ought to consider rather seriously.

Mr. JACOWAY. Have not the same results that you are trying to obtain under this item of \$25,000 been obtained at a place called Scott, in Pulaski County, Ark.? Are you familiar with the conditions down there?

Dr. KELLERMAN. That cooperative marketing organization was developed by the Bureau of Markets. It is not trying to introduce new varieties of cotton.

Mr. JACOWAY. That is where they all plant the same kind of cotton. The machinery to gin that cotton, as I understand it, is adjusted the same the year around, and the fiber is the same, the tensile strength is the same, and they sell the cotton in quantities of not less than 100 nor more than 1,000, and they take a special pride in looking after their seed, so that it will be a nonconductor of disease. These people have found that by doing that they get much more for their cotton and for their seed, and they can sell the cotton and the seed quicker and more advantageously because, as suggested by you, it is sold in quantities. It is suggested by the chairman that if this is to be a policy of the department we will have these things scattered all over the country.

Mr. HAUGEN. Is it not possible to carry on this kind of work at the experiment stations of the State?

Dr. KELLERMAN. The advantages of having the station located at Greenville is that of being in the center of a cotton country. That section of Texas is very near the center of a large cotton area that produces a very good grade of cotton.

Mr. HAUGEN. The experiments could be carried on at more than one experiment station; they could be carried on in all the cotton-growing States.

Dr. KELLERMAN. This in many ways could hardly be called an experiment.

Mr. HAUGEN. You refer to it as an experiment, and demonstrations under it.

Dr. KELLERMAN. It would be more nearly a demonstration. What we want to do through the agency of this station is to get the farmers for a considerable area to use our seed and to follow the plans that we develop for producing these special types of cotton under conditions that would prevent their being crossed with other types, and it is just the advantage of having such a station located in the heart of a cotton district that has made it seem desirable to consider the establishment of a station in that portion of Texas.

Mr. HAUGEN. The Government has a large army of people in the field demonstrating all the time?

Dr. KELLERMAN. Yes, sir.

Mr. HAUGEN. Is it not possible that this work could be done through them? Would this not be a duplication of work and the setting up a dual system here in your department?

Dr. KELLERMAN. This was especially considered, and I think there is no possibility of any duplication of effort. Developing and starting a seed supply would require an amount of looking after for some years, and a county agent could not handle it. It would take more time and attention than the county agent could devote to such work, and he could not keep his seed pure anyway.

Mr. ANDERSON. What can a county agent do in a county where they do not raise much but cotton except to look after the cotton?

Dr. KELLERMAN. This is a question of substituting a new variety of cotton in a region, and a great many special points would be coming

up on which the county agent would have to get the specialist's help, and what we want to do is to have specialists down there to start the seed supply and to help in keeping it pure.

Mr. ANDERSON. Do you intend to actually produce the seed for general distribution to start this thing?

Dr. KELLERMAN. Yes; that would be necessary; first, to have a production of seed of a special variety sufficient to plant a considerable area, then the careful supervision of the farms that would grow the cotton in quantity, and finally to teach how the cotton variety could be maintained true to type.

Mr. ANDERSON. Are you going down there to demonstrate a proposition that is past the experimental stage and where you have an established method. Now, what reason is there to suppose that there will be any greater spread of the adoption of that method by the establishment of this station than there would be from the adoption of the method in such places as Mr. Jacoway has suggested and as the chairman has suggested? In other words, there are places where this plan is being followed now. It is a demonstrated proposition. It is now merely a question of propaganda. Why restrict it to an area down in Texas?

Dr. KELLERMAN. This plan is different from those discussed by Mr. Jacoway. This is the attempt to most quickly and effectively change a region over to a better type of cotton production. That seems to be a very good area in which to handle it for the cotton belt. In selecting that area in Texas we believe it will have a very wide significance. If the plan succeeds, as we expect it to, it will be appreciated widely throughout the cotton belt. But the point that I think should be kept in mind is that, although this, from our standpoint, is simple and obvious, from the standpoint of the cotton planter it is not, and from the standpoint of what you might call the average cotton specialist it is not. The cotton agent himself, although experienced in cotton growing, is not likely to be at all experienced in changing a community to a new type of cotton and preserving a pure seed supply.

Mr. HAUGEN. Could not arrangements be made whereby you could assign some specialists to these experiment stations and carry on the work at much less expense and just as effectively?

Dr. KELLERMAN. I think not as effectively. That has been a matter that we have considered carefully, and it has seemed to us that the actual establishment of the station was, in the long run, likely to be the cheapest plan of handling the work. We have felt that we could save so much time and have our work count to so much greater degree and so much more quickly, and we can extend the utilization of the best varieties so much more rapidly by actually having the station in this region, that we have felt that it was proper to recommend it. While this might be done in other ways, this is probably, in the long run, the cheapest.

Mr. HAUGEN. Is not this the extension of the policy we embarked upon some years ago in establishing stations? Years ago, of course, experiment stations were provided for in every State. Then we started in and put in a second one, and then we put in three or four of them, and this is really an extension of that policy?

Dr. KELLERMAN. I do not regard it as the extension of any station establishment.

Mr. HAUGEN. We started in North Dakota. It is not a beginning, but it is carrying it out.

Dr. KELLERMAN. This is such a special line of work that we are simply trying to use the best tools for doing it.

Mr. HAUGEN. I do not question that.

Dr. KELLERMAN. The extra time that must elapse in trying to organize communities, when you have no good starting point to really get hold of the work, where all of the developments would be homeopathic—

Mr. HAUGEN (interposing). In many localities these demonstration experiments are carried on in counties?

Dr. KELLERMAN. Yes; but this is a new kind of demonstration.

Mr. HAUGEN. But that is under the experiment station or by arrangements by the communities in cooperation with the State colleges?

Dr. KELLERMAN. Except in an unusual county it seems impossible to organize the county.

Mr. HAUGEN. The main industries in Texas are largely cattle raising and cotton growing?

Dr. KELLERMAN. In this section of Texas cotton is the main industry.

Mr. HAUGEN. Well, it seems to me that the people in charge of the station there should take some interest in cotton, if that is the main crop, and it is a matter that ought to have had considerable attention and consideration before. I say the danger is in the additional expense and probably what seems to me might be an unnecessary expense. I have no doubt that it would accomplish much good, but the question is, What can you do with this money to the best advantage and is it advisable at this time to create these additional stations when we already have one or two in each State? In a number of States we have one experiment station and in others we have two, and if we start on that policy, of course, we will have to give each State two. If we give it to one or two or five, it is natural that the others will want to come in for an additional station. We have had a good many requests for additional stations already since we started with one.

Dr. KELLERMAN. If this were to be a general station, I think we would hesitate a great deal about recommending it. This is a station for a very special purpose.

Mr. HAUGEN. You have knowledge of the one that we placed in Louisiana. I presume provision for that is still carried in this bill. When one is started they ask for general appropriations and generally large increases. I have no doubt it has done very much good. I am not questioning that.

The CHAIRMAN. Anything further, gentlemen? If not, I guess we had better take a recess at this point. It is 12 o'clock now, and the President addresses the House at 12.45.

(Thereupon, at 11.56 o'clock a. m. the committee adjourned to meet again at 10.30 o'clock a. m. Saturday, January 5, 1918.)

~~SECRET~~

1. The first part of the document discusses the importance of maintaining accurate records of all transactions, including sales, purchases, and expenses. It emphasizes the need for a systematic approach to record-keeping, such as using a ledger or accounting software, to ensure that all financial data is properly documented and organized.

2. The second part of the document focuses on the importance of regular financial statements, such as the balance sheet, income statement, and cash flow statement. It explains how these statements provide a clear picture of the company's financial health and performance over a specific period, allowing management to make informed decisions based on the data.

3. The third part of the document discusses the importance of budgeting and financial forecasting. It highlights the need to set realistic financial goals and create a budget that outlines the expected income and expenses for a given period. This process helps management anticipate potential financial challenges and plan accordingly to ensure the company's long-term success.

4. The fourth part of the document addresses the importance of financial control and monitoring. It emphasizes the need to regularly review financial data and compare it against the budget and financial goals. This allows management to identify any variances and take corrective action as needed to stay on track and achieve the desired financial outcomes.

5. The fifth part of the document discusses the importance of financial reporting and transparency. It explains how providing accurate and timely financial reports to stakeholders, such as investors, creditors, and regulatory bodies, is essential for building trust and maintaining the company's reputation. It also highlights the importance of disclosing any potential risks or uncertainties associated with the company's financial position.

6. The sixth part of the document discusses the importance of financial planning and strategy. It emphasizes the need to develop a clear financial strategy that aligns with the company's overall business goals and objectives. This involves identifying key financial metrics, setting targets, and implementing measures to optimize financial performance and ensure the company's long-term sustainability.

7. The seventh part of the document discusses the importance of financial risk management. It highlights the need to identify and assess potential financial risks, such as market fluctuations, credit defaults, and currency exchange rates, and develop strategies to mitigate these risks. This helps the company protect its financial assets and maintain its financial stability in the face of uncertainty.

8. The eighth part of the document discusses the importance of financial innovation and technology. It emphasizes the need to embrace new financial technologies and tools, such as blockchain, artificial intelligence, and data analytics, to streamline financial processes, improve efficiency, and gain valuable insights into the company's financial performance.

9. The ninth part of the document discusses the importance of financial education and training. It highlights the need to provide ongoing financial education and training for employees, particularly those involved in financial management, to ensure they have the necessary skills and knowledge to effectively manage the company's finances.

10. The tenth part of the document discusses the importance of financial ethics and integrity. It emphasizes the need to maintain high standards of ethical behavior and transparency in all financial transactions and reporting. This helps the company build a strong reputation and maintain the trust of its stakeholders, which is essential for long-term success.

Dr. KELLERMAN. It has been grown in Kansas. That is probably about as far north as it can be grown to advantage.

The CHAIRMAN. Is it the same plant that we know as the *Palma christi*? It grows tall, has large leaves, and produces a bunch of rough seed.

Dr. KELLERMAN. Yes, sir.

Mr. LEE. That can be grown anywhere in Georgia or South Carolina?

Dr. KELLERMAN. Yes.

Mr. THOMPSON. It grows in Oklahoma and Texas.

Dr. KELLERMAN. It grows well in Oklahoma and Texas.

The CHAIRMAN. If there are no further questions on that item, take up item 82, "for crop technological investigations, including the study of plant-infesting nematodes, \$24,940."

Dr. KELLERMAN. There is no change in the funds under this item. The work has been changed so as to devote the major part of our energies to the determination of the areas that are most seriously infested with nematodes and to determine what methods for combatting nematode injury are practicable. This work becomes of unusual importance in some of the sugar-beet regions, where certain of the areas become so badly infested that sugar-beet production is likely to be more or less a complete failure. In these sections an attempt will be made during the coming year to determine in advance of planting what areas are so badly infested that sugar beets can not be expected to succeed, so that other crops that are not injured by the nematodes may be put in these areas and the sugar-beet planters can use other ground.

The CHAIRMAN. Anything further on that, Doctor? If not, take up item 84, "for studying and testing commercial seeds, including the testing of samples of seeds of grasses, clover, alfalfa, and lawn-grass seeds secured in the open market, and so on, and for carrying out the provisions of the act to regulate foreign commerce by prohibiting the admission into the United States of certain adulterated grain and seeds unfit for seeding purposes." There is an apparent increase in this item of \$1,980, but an actual increase of \$3,000. Tell us briefly what you are doing and what you intend to do with the increase, Doctor?

Dr. KELLERMAN. Under this item we make tests of seed quality for seedsmen and farmers. The seed laboratories in the various sections of the country have been doing more work during the past year than ever before. Partly because of high prices for seed and partly because of the desire for extending acreages, the interest in seed quality has been increasing. The seed dealers in an informal conference in Washington last year agreed to label their seed, showing not only the kind of seed but purity and germinability. The undertaking is somewhat unique for this country, but it is believed that it will be very greatly in the interest of the planter, and this work will considerably increase the already somewhat overtaxed seed laboratories. We feel, therefore, that it is necessary to employ two additional assistants to help in the seed-analysis work, and it is for that purpose that the increase of \$3,000 is recommended.

The CHAIRMAN. This is a standard work, Doctor, that will continue?

Dr. KELLERMAN. Yes, sir; in this work there has been very little change during the past few years.

The CHAIRMAN. You also enforce the seed-importation act out of this fund?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. Any questions, gentlemen? If not, take up item 85, for the investigation and improvement of cereals and methods of cereal production, and the study of cereal diseases, and for the investigation of the cultivation and breeding of flax for seed purposes, etc., \$186,505. There is no change in the sum estimated for that work. Tell us something about that, Doctor.

Dr. KELLERMAN. This work consists in the development of methods for cereal production, the breeding of better varieties of cereals, and their gradual introduction in farming operations. Special attention is also devoted to breeding for resistance against the most troublesome diseases, the investigation of new diseases of cereals that appear to be serious, and the development of methods for the control of these diseases.

The CHAIRMAN. What is your method with regard to the work under the first proviso setting aside \$40,000 for the study of corn improvement and methods of corn production? Do you proceed in reference to that about the same as you would in the improvement of seed for cotton and things of that kind?

Dr. KELLERMAN. In somewhat the same way. Part of this work is carried on in cooperation with special corn growers. Perhaps more attention has been given to corn by special corn breeders than is the case with other crops, but many difficulties have arisen in the moving of seed from one area to another. It is well recognized, of course, that corn shipped into totally new localities seldom behaves as it had been behaving in the old locality. Consequently, the work in the development of new varieties of corn requires more local attention in the different corn-producing regions. The establishment of improved varieties involves the development of promising types, the distribution of these types in the different regions, and quite a good deal of follow-up work for the next few years to see that these varieties are properly selected in each region and that the desirable types in each region are retained until a sufficient seed supply in each region is available.

The CHAIRMAN. I gathered from your statement yesterday touching the breeding of cotton seed that one of your chief difficulties, after having developed a good type, was to hold it to type. Is that true?

Dr. KELLERMAN. Yes, sir; that is true with corn as well as with cotton. There is much less difficulty, however, in the case of corn, since farmers are more in the habit of taking precautions in the care of seed corn, and, furthermore, there is not the complication that arises in the case of cotton through the mixing of seed in gins, which is one of the serious difficulties in maintaining cotton varieties.

The CHAIRMAN. There is another proviso in this item setting aside \$20,000 for the investigation of diseases of wheat, oats, and barley, known as black rust and stripe rust. That was a very important matter some years ago. I wonder what progress you are making with that?

Dr. KELLERMAN. Very satisfactory progress is being made. The diseases are serious. The black rust, or stem rust, is especially serious from time to time. That disease sweeps over the spring-wheat area as an epidemic, in some cases almost the total crop being destroyed. In 1915 it was very bad, and many of the fields that were affected did not produce enough wheat to pay for harvesting. The investigations during the past few years indicate clearly that the native barberry plant is responsible to a very considerable degree for these epidemics. The disease will overwinter on the barberry and will start from the barberry back to the wheat with greatly increased vigor. Although it is not possible to completely eradicate black rust by the eradication of barberry, it appears certain that the severity of the black-rust epidemic can be greatly reduced by systematic and thorough eradication of the native barberry. This is not likely to be particularly difficult, since the Japanese barberry is in most cases preferred as an ornamental plant, and the Japanese barberry is not susceptible to this disease. So in this case the Japanese barberry will be a substitute for the native barberry and the disadvantage of completely eradicating the ornamental plantings will be very largely met in this way.

North Dakota at the last session of its legislature established a barberry eradication law, in view of the indications that such action would be necessary in connection with wheat growing, and the interest in all of the adjoining States is developing very rapidly in the same direction. Regardless of law, it is probable that it will be possible to get a very thorough eradication of native barberry throughout this region in the near future.

The stripe rust is rather widely distributed. It is, however, not as dangerous as at first had been feared, and it does not appear to be a disease very recently introduced into the country, which was the supposition a few years ago. That supposition resulted from the fact that that was the first year the disease had shown very serious injury.

Mr. THOMPSON. Does black rust reach throughout the entire wheat region and attack wheat everywhere?

Dr. KELLERMAN. Yes, sir; it has not been so destructive, however, in the southern regions. The same methods of control would probably be very effective in all the wheat regions.

Mr. THOMPSON. In my State, Oklahoma, for two or three years it did great damage to the crop. In 1913, for instance, it practically destroyed the crop.

Dr. KELLERMAN. Was that altogether the stem rust? There are other rust troubles and smut.

Mr. THOMPSON. The smut did not affect the wheat that year. It was the rust.

Dr. KELLERMAN. As a general rule, the stem rust has not been serious in any of the winter-wheat regions, although it has caused some losses; but they have been comparatively small as compared with the losses in the spring-wheat regions.

Mr. HUTCHISON. I believe you said that in 1915 the rust practically wiped out the spring-wheat crop, and that in 1916 the disease did not have any effect. Do you know why that was?

Dr. KELLERMAN. It is almost impossible to explain the occurrence and disappearance of the rust epidemics. In 1914 there was rather

a severe epidemic. Ordinarily a year following a bad epidemic is practically clean; that is, the injuries are comparatively slight. In 1915, however, the injuries were very much worse than they had been the year before. There have been comparatively minor injuries this year. That may have been due to the somewhat cooler weather in the early part of the season.

Mr. HUTCHINSON. That was my idea. I was wondering whether the climate did not have something to do with it, as in the case of the blight in the potato.

Dr. KELLERMAN. It has a great deal to do with it; but even under favorable climatic conditions the epidemic will be less severe if there are no barberry plants anywhere near the wheat region. That is the main point we are trying to establish—the importance of barberry eradication. Then, even in the favorable years for the disease, it is not likely to spread.

The CHAIRMAN. Anything further, gentlemen? If not, take up item 86, for the investigation and improvement of tobacco and the methods of tobacco production and handling. There is no change in the amount. If you have anything of interest to report or have started any new work, will you please tell us about it, doctor.

Dr. KELLERMAN. The work under this item is comparatively little changed. It has been continuing as heretofore, and consists of the development of the best methods of tobacco production to maintain both quality and yield, including cultural methods, the selection of good yielding types of tobacco, and the reduction of disease. One of the serious difficulties that tobacco growers have to meet in the Burley districts is root rot. Plants of the same quality and yield but resistant to the root rot have been developed and are very rapidly taking the place of the disease-susceptible types that were formerly grown. The other difficulties in other sections—root troubles, largely—have been traced to defective fertilizer, and in many of the regions where losses in tobacco crops have been material the disease is almost completely controlled by shifting to fertilizers that are slightly more acid in their reaction.

The CHAIRMAN. Any further questions? If not, take up item 87, for testing and breeding fibrous plants, including the testing of flax, straw, and hemp, in cooperation with the North Dakota Agricultural College, which may be used for paper making. There is no change in that item of \$16,760. Is there any progress to report?

Dr. KELLERMAN. The work is progressing favorably, although somewhat slowly. It appears that there is an opportunity for developing a very good grade of paper from flax straw, especially for such purposes as making counters in shoes. This is being thoroughly tested out, and the practicability of straw assembling and utilization for paper making is now under way.

Mr. THOMPSON. How long has that testing out been going on?

Dr. KELLERMAN. It was begun in a small way several years ago; I think that work has been going on approximately five years.

Mr. THOMPSON. How long will it take you to complete the work and eliminate this appropriation?

Dr. KELLERMAN. Probably one or two years, I think. We had contemplated greatly reducing this work about this time, but delays in getting satisfactory tests of the papers that might be manufactured

made it seem desirable to continue it. We were not considering the complete closing of the project, but we were planning to reduce our work.

Mr. THOMPSON. This will not be a continuing appropriation, then?

Dr. KELLERMAN. This is not likely to be continuing much longer.

The CHAIRMAN. If there are no questions, take up No. 88, for the breeding and physiological study of alkali-resistant and drought-resistant crops, \$24,280. There is no change in that item, Doctor?

Dr. KELLERMAN. There is no change in that item. During the past few years the major portion of the work has been devoted to the breeding of the best varieties of Egyptian cotton, that work being in an arid region and the facilities of this office being peculiarly favorable for working along breeding lines in those regions. A new variety of cotton has been originated called the Pima cotton, named after the Indians of that region; a variety of Egyptian cotton that is perhaps the most desirable type of Egyptian cotton grown. It certainly compares very favorably with the best Egyptian varieties that are imported, and under present conditions, when the supply of long-staple cotton is very scanty, the importance of this new development seems to be very great. By cooperation with the Indian Office, whose agency was used practically as headquarters for a seed-breeding station, it was possible to increase the supply of seed of this new variety to such a quantity that a very material section of the Salt River Valley could be changed over en bloc from the former type of Egyptian cotton to the Pima cotton. Under a special agreement with the farmers of that region about 4,000 acres were planted in a solid block in the new cotton, and around those 4,000 acres about 3,000 acres more of the same general type of cotton has been planted—what we call a buffer crop. The seed from these 4,000 acres will be pure seed and will be sufficient for planting the entire Salt River Valley in this superior new type of cotton this coming year. That is contemplated, and will produce, therefore, throughout an entire region what is probably the most uniform and strongest long-staple cotton that will be grown anywhere in the world.

The CHAIRMAN. For what is that cotton largely used, Doctor?

Dr. KELLERMAN. That is used largely for automobile-tire fabrics and for the manufacture of light, strong fabrics for any purposes. Some experimental spinning of that cotton is being made now for airplane fabric.

The CHAIRMAN. If there are no questions, take up item 89, for sugar-plant investigations, including studies of diseases and the improvement of the beet and beet seed and methods of culture, and to determine in each sugar-beet area the agricultural operations required to insure a stable agriculture, etc., \$64,115. There is an actual increase in that item of \$10,000, to be used to extend the co-operative work in the production of sugar-beet seed. Go ahead, doctor, and tell us about that.

Dr. KELLERMAN. The work under this item began originally to determine the best utilization of the sugar beet in American agriculture. Under the existing developments it has been necessary to devote more and more attention to the extension of this crop and to the protection of the industry from the shortage of the seed supply. The supplies of seed for the beet-sugar industry heretofore have all been of European origin. German, Austrian, Polish, and Russian

seed was used exclusively. That was purely a question of price. It appeared to be somewhat cheaper to get the seed abroad than to go to the expense and trouble of raising it in this country. Accordingly, there was no experience in sugar-beet seed production in this country at the time of the beginning of the war, and with the difficulty of importing suitable supplies of beet seed the industry became very apprehensive that it would be impracticable to maintain the sugar-beet industry on its present basis. Largely as a technical matter, the bureau had been working for some years on the question of the development of beet seed in this country, and, in cooperation with commercial companies who appreciated the urgent necessity of rapid beet-seed development, the bureau has been developing the necessary methods for handling beets for seed production. About a quarter of the beet seed necessary for the season's crop was produced for this season. During the coming year it is probable that a third or more of the supply necessary for the entire needs of the industry will be produced in this country.

Mr. OVERMYER. Are there any sources of seed supply still open in Europe?

Dr. KELLERMAN. There is a possibility of a Russian supply. There is, of course, in this country a considerable quantity of seed. Seed has been purchased wherever it was possible to purchase it, and during the coming year there will be seed available for planting the entire acreage.

The CHAIRMAN. What can you tell us about the other proviso:

That of this sum \$12,500 may be used for investigations in connection with the production of cane and sorghum sirup, including the breeding, culture, and diseases of cane and sorghum, and the utilization of cane and sorghum by-products.

Dr. KELLERMAN. The utilization of cane and sorghum for sirup production appears to be of increasing importance. That was true even before the war. The interest of the general public in sirup appeared to be increasing, and with the stringency in the sugar supply that interest is greatly increased. We are attempting to develop more satisfactorily methods for sirup production and also to develop the crops that are most suitable for sirup production. Of the sorghum varieties especially many strains are very desirable, while many others are less desirable for sirup making. Work under this item, therefore, is devoted to the selection and development of the best varieties of sorghum for sirup making and their extension throughout the regions where these crops can be grown profitably.

The CHAIRMAN. You work on the sugar beet and the sirup takes up about \$22,500. That leaves of this appropriation about \$42,000. How are you using the balance of that fund?

Dr. KELLERMAN. The major work of this item has been and is still the development of the best methods of sugar-beet production. This is largely a question of cultural methods, the best field operations, the most necessary rotations, the methods necessary to guard against serious plant diseases, and other problems of a similar nature that would be generally classed as farm problems in connection with sugar-beet raising.

The CHAIRMAN. Any questions, gentlemen? If not, take up item 90, for investigations in economic and systematic botany and the improvement and utilization of wild plants and grazing lands, \$23,100

There is no change in that amount, Doctor? Have you any report of progress?

Dr. KELLERMAN. The work of this item, to a considerable degree, is that of the specialist, cooperating with other offices in determining the various plants that may be unknown and other technical researches of a purely botanic nature. In addition, this office is cooperating with the Forest Service in development of range methods for extending the growth of the useful plant while crowding out or smothering out the plants that are not useful for range purposes, by determining the seeding time of the desirable plants and of the other undesirable plants and pasturing or grazing these particular areas at times such that the sheep or cattle will eat and destroy the undesirable plants just as they are coming into seed, while the stock are kept off the range at the time that the most desirable plants are coming into seed. In that way the ranges can actually be greatly improved by proper grazing.

The CHAIRMAN. There is, then, no conflict between the work under this item and the work under other bureaus? It is cooperatively entirely?

Dr. KELLERMAN. There is very close cooperation with the Forest Service; the work of this office is entirely advisory, so there is no conflict of any sort.

The CHAIRMAN. All right, Doctor. Take up item 91, for the investigation and improvement of methods of crop production under subhumid, semiarid, or dry-land conditions, \$160,000, with a proviso about the Mandan station.

Dr. KELLERMAN. The work under this item was developed primarily for the purpose of determining what types of agriculture were best adapted to the Great Plains region and to establish those methods of farming. The work was undertaken on such a scale that comparative study of the entire area was possible. At the present time the work has made possible a clear determination of what kind of farming is really sound in this area, thereby benefiting the region by getting this type of agriculture extended over a greater portion of the area. Indirectly, also, the work has prevented a great deal of exploitation of this area by people ignorant of its agricultural limitations. This area has probably suffered more than most areas from the enthusiasm of people who saw great possibilities during favorable years and did not appreciate that the dry years were a serious barrier to its continued development along extensive lines. It is now very clear that live stock must be utilized to a very great extent throughout all this region if the region is to annually turn in its greatest profit to the country and to the farmers.

The CHAIRMAN. Any questions on that item, gentlemen? If not, take up the next one, item 92, for investigations in connection with western irrigation agriculture, the utilization of lands reclaimed under the reclamation act, and other areas in the arid and semi-arid regions, \$73,580, with an apparent decrease of \$1,800, which is not an actual decrease but merely a transfer to the statutory roll.

Dr. KELLERMAN. There is actually no change in the item. For some years this work has been the experimental development of agriculture under irrigation, largely in connection with the governmental reclamation projects. The intention has been to develop the

technical phases of irrigation agriculture in order to supply the foundation for the extension work in these regions which could be carried direct to the farmer by the county agent or by our own demonstration agents, provision for the latter work being carried under another item. These investigations have been of very great importance in aiding the settlers, both directly and indirectly, by establishing actual experimental tests of plants that the settlers would not have been able to take up themselves and by experimenting with systems of rotation and of cropping that the settlers could not have handled themselves.

The CHAIRMAN. What has been the policy of the department, under the war conditions, of encouraging new developments along agricultural lines; large undertakings that are entirely new and require a good deal of new machinery and new capital and things of that kind?

Dr. KELLERMAN. It has been the policy of the department to discourage such undertakings. It has appeared clear to us that the sudden undertaking of large new enterprises would result in a very severe draft upon farm labor, and would also call into use in new regions large supplies of farm machinery of all kinds and capital that would be much more productive in the immediate future if, first, the farmers could be left on the land with which they are now familiar and are now handling effectively; second, if the farm machinery which would be taken into these new regions could be available for existing successful farming; and, third, it has always been the experience in the development of any new region that the first few years have been unproductive, so far as the public is concerned. The farmer going into a new region has first to establish himself and must become sufficiently familiar with the area in which he is trying to develop his farming so that he can grow and market his crops profitably, and several years are required before a new area is really productive. From a national standpoint, the first few years will be actually a loss. Without an excess supply of labor and of machinery, the development of new areas is almost certain to result in decreasing our total agricultural production for a considerable period.

The CHAIRMAN. The policy, then, is to speed up existing machinery rather than to introduce new machinery into agriculture?

Dr. KELLERMAN. Exactly. We feel that that is essential at the present time; that only such extension of agriculture as the farmer himself could take up in adjacent territory is at all proper or sound.

The CHAIRMAN. The natural extension?

Dr. KELLERMAN. The natural extension of existing agricultural operations.

The CHAIRMAN. That is an interesting statement. It just happened to occur to me to ask that question.

Mr. YOUNG of North Dakota. Have you had anything to do with the consideration of New Zealand flax as a substitute for what they are using now for binder twine?

Dr. KELLERMAN. To some extent. We do not regard New Zealand flax as a promising substitute at all, both from the cultural standpoint and from the standpoint of the fiber. It does not appear that New

Zealand flax will be able to compete with the existing hard fiber supply—the Manila maguey and sisal and henequen. These are the most satisfactory and, in general, the cheapest hard fibers for the production of binder twine. We are attempting to stimulate the production of these hard fibers, both in the Philippine and in Porto Rico. It is probable that the Philippine production can be very greatly increased. There is quite a good deal of sisal and of Manilla maguey planted there, and those fibers can be produced more economically than the New Zealand flax.

Mr. YOUNG of North Dakota. If the Philippines should cease to be an American possession we would depend very largely on Mexico, would we not, for our supply?

Dr. KELLERMAN. We can stimulate production of sisal in Porto Rico and probably in Haiti, Santo Domingo, and Cuba, and it appears probable that that is really a more satisfactory thing to do.

Mr. YOUNG of North Dakota. You understand that the International Harvester Co. thought well enough of this as a practical proposition out of which to manufacture binder twine to go to the expense of bringing a shipment of the seed up to San Francisco?

Dr. KELLERMAN. Yes, sir. That was done, although it appeared to us that it was rather a gambler's chance as to whether it would be worth while or not.

Mr. YOUNG of North Dakota. They are practical people, aren't they—the International Harvester Co.?

Dr. KELLERMAN. I think they are very practical people, but in that particular undertaking they were starting to introduce a plant which was infected in such a way that it would have practically guaranteed the failure of the plantings if the plantings had been made in this country. As a matter of fact, the State inspector at the port of San Francisco, finding these plants in bad condition, urgently advised the complete destruction of the entire shipment. After some correspondence with the department, the International Harvester Co. decided that that was the most desirable thing to do, and I have been advised that the plan they ultimately decided upon was to destroy that entire shipment and abandon the attempt to introduce the New Zealand flax.

Mr. YOUNG of North Dakota. You understand that New Zealand flax has been grown successfully in southern California and in Florida as an ornamental plant?

Dr. KELLERMAN. Yes.

Mr. YOUNG of North Dakota. And it has been put up to your department a number of times by Charles Christodoro, of Point Loma, Cal., and others, that it is feasible to increase the production and manufacture a satisfactory twine from it. Those who have been trying to interest the department, and I am one of them, have not been able to get any response at all, and we thought it rather peculiar that your department should consider it entirely impractical when a very practical concern like the International Harvester Co. showed enough interest in it to put their good dollars into it.

Dr. KELLERMAN. I am surprised to hear that you got no response from the department. It seems to me that, according to my recollection—

Mr. YOUNG of North Dakota (interposing). I do not say we did not get a letter, but we got no encouragement.

Dr. KELLERMAN. I think that is true because it is the conviction of our fiber experts that the fiber is not likely to be a competitor with these other fibers that are used for binder twine.

Mr. YOUNG of North Dakota. In one of these letters you stated that in New Zealand they have not got the process for putting it out sufficiently developed so that they can compete with the twine made from other products. It seemed to us that you were rather underestimating the ingenuity of Americans and building too much on the failure of others to handle this product when we have people in this country who say that they can manufacture this and sell it very much cheaper than the figure at which the present binder twine is being sold.

Dr. KELLERMAN. What we have urged in this matter was that only small experiments be tried in this country, although we are not at all enthusiastic about the success of the experiments. What we have urged against is extensive planting, since at the present time we see no good reason for supposing that this fiber will be satisfactory in twine manufacture in this country. We have not attempted to prevent the planting of New Zealand flax in this country. We have only urged that special precautions be taken in planting it, so that troublesome pests would not be introduced that might of themselves spoil an industry if such a one were to develop, and, second, that just as a matter of prudence, since it is a fiber that we are not at all enthusiastic about, we urge that it be taken up on a small scale. There are sufficient plants in this country so that a small-scale planting is possible. Tests on a small scale could be made to determine whether, from a large manufacturing standpoint, it is wise to encourage the planting of New Zealand flax over large areas.

Mr. YOUNG of North Dakota. But you will not help to make that small experiment, as I understand it?

Dr. KELLERMAN. We could not help under present conditions. We have not felt that the plant was of sufficient promise to warrant asking for funds to investigate this special plant, and at the present time we are putting all of our energies on these other plants—hemp, sisal, and Manila maguey.

Mr. YOUNG of North Dakota. You understand that that is thoroughly in line with the desires of the fiber trust. That is taking a course with which they are very greatly pleased. I am not accusing you, understand, of any direct complicity in that, but you understand that that is a course that pleases them very greatly and that the prices of binder twine are jumping up every year. As I understand you, you are not willing to gamble even a little money to try this out?

Dr. KELLERMAN. I would rather put it the other way. We would rather gamble all we have on the supplies that we consider most hopeful than on something about which we are not enthusiastic.

Mr. YOUNG of North Dakota. But you can do both—experiment along the lines of your present work and add this very trifling experiment that ought not to cost more than \$5,000.

Dr. KELLERMAN. That would be true if we had abundant funds. It has just been a question as to how to expend our funds to the best advantage.

Mr. YOUNG of North Dakota. I do not want to pursue this inquiry too long and keep the committee waiting, but a little later I am going to put up to the committee the proposition that when the binder-twine prices are being greatly raised, this Government ought to gamble about \$5,000 in testing out this New Zealand flax, which Americans say they can produce cheaper. Here [producing sample of the flax] is a sample of what they call New Zealand flax. The technical name is *Phormium tenax*, and this is produced in southern California as an ornamental plant. It grows 8 feet high and is a beautiful plant; and it will produce from 12 to 14 tons to the acre, which is probably 10 times as much as you can grow of henequen; so that, if they can use this at all, it will be a very cheap product.

Mr. HAUGEN. Was that grown from the seed?

Mr. YOUNG of North Dakota. From the roots. They can grow it from the seed. I have a letter from Secretary Houston this morning in which he says that on account of the danger of plant insects or infections you would have to do it by introducing the top, that is, the seed. That is what he suggests. I presume it ought not to cost much to get the seed and have it tried out.

Mr. HAUGEN. Does it produce large quantities of seed? As a commercial proposition would it pay to plant this?

Dr. KELLERMAN. Not for seed.

Mr. HAUGEN. A considerable amount of twine is made out of flax. I know that all the straw in my country was bought by, I believe, the International Harvester Co. But I understand it has been abandoned. Do you know the reason why?

Dr. KELLERMAN. I think there have been several reasons for the abandonment. The flax twine was not sufficiently brittle for the binder to cut it properly. That was one trouble. Any soft fiber is unsuited as binder twine, since it is likely to jam instead of cut in the cutter.

Mr. HAUGEN. You mean the cutter in the binder?

Dr. KELLERMAN. In the binder. That is one of the difficulties. There was an attempt to get around that by using the fiber without retting it, or retting it to any great degree. Then there was sufficient of the gluey substances that hold the fiber together—pectin, we call it—so that grasshoppers chewed up the flax fiber, and for that reason it was considered to be practically a hopeless task to make a flax-fiber binder twine.

Mr. HAUGEN. It is not practical to use it?

Dr. KELLERMAN. I am afraid not.

Mr. YOUNG of North Dakota. We would be in pretty bad shape if we were shut off from the Mexican supply at any time, wouldn't we?

Dr. KELLERMAN. Yes; that would be a very serious matter.

Mr. YOUNG of North Dakota. Don't you think that we should be working very hard toward an American supply of something that would bind up our grain?

Dr. KELLERMAN. Yes; that is very desirable.

Mr. YOUNG of North Dakota. Don't you think you could take this up with the Secretary again and put through some recommendation that will enable the department to really assist instead of sitting back and waiting for somebody else to do it? Should not the department

assist in trying this out? It is not likely that the International Harvester Co., after going to the expense of bringing in a shipload of this stuff and having it dumped into the harbor, will feel like spending any more money on it, and I do not think any of those poor planters out there in southern California have got enough money to try it out. It looks to me, therefore, as though this was a case where the Government ought to step in and invest a reasonable amount of money to help experiment with it, especially as it is at this time a war question, it would seem to me, to insure a supply of binder twine for use in the United States, produced in our own country.

Dr. KELLERMAN. It would be very easy for us to outline just what would be necessary in order to undertake such a test. I rather hesitate to say whether we would agree to go any further than that.

Mr. YOUNG of North Dakota. Will you do that?

Dr. KELLERMAN. We will be very glad to do that.

Mr. YOUNG of North Dakota. Well, thank you for that much.

The CHAIRMAN. What can you tell us about the hemp? A great deal of interest is taken in that. Is that being grown with any great success in this country?

Dr. KELLERMAN. That is being grown with very great success in this country. The area planted in hemp is increasing rapidly and it has been found feasible to grow it more widely than was at first supposed. Good hemp can be grown in many sections of the United States, and by proper attention to the kinds of hemp that produce good fiber it seems to be a very profitable crop.

Mr. HAUGEN. Will you indicate in what sections it can be grown successfully?

Dr. KELLERMAN. Of course, the Kentucky section is one of the most famous ones. It has been grown during the year in Wisconsin very successfully and in other parts of the Middle West. It would probably be more satisfactory if I would put into the record a statement showing the approximate course in the different areas.

Mr. HAUGEN. I understood that there were a good many acres planted in North Dakota?

Dr. KELLERMAN. There was some planted in North Dakota and some in Minnesota. In the Minnesota case I am sure the results were reported to be very good. I do not remember about the North Dakota plantings.

Mr. HAUGEN. Would that be adaptable in our section of the country?

Dr. KELLERMAN. I think it could be grown very successfully there.

Mr. HAUGEN. Would it require much moisture?

Dr. KELLERMAN. It requires moisture and good land for the best yields.

Mr. HAUGEN. It would be very interesting to have a statement as to that, because quite a good deal of interest is being taken in it.

Mr. YOUNG of North Dakota. You mean as to New Zealand flax or experiments with hemp?

Mr. HAUGEN. Experiments with hemp. You are interested in that?

Mr. YOUNG of North Dakota. Surely; I am interested in any possible way out of the binder-twine situation.

(The statement referred to follows:)

HEMP INDUSTRY IN THE UNITED STATES.

The hemp-growing industry in the United States has increased from about 4,000 acres in 1914 to more than 40,000 acres in 1917. The following table gives the States, acreage, and estimated total pounds of fiber per State for the crop of 1917. The yield of fiber can only be estimated, because comparatively little of it has been broken out thus far :

States.	Acreage.	Total pounds of fiber.	States.	Acreage.	Total pounds of fiber.
Kentucky.....	18,000	16,000,000	Iowa.....	500	300,000
Ohio.....	1,500	1,500,000	North Dakota.....	5,000	200,000
Indiana.....	2,400	2,400,000	South Dakota.....	500	200,000
Michigan.....	400	400,000	Kansas.....	300	.....
Wisconsin.....	7,000	8,400,000	California.....	5,000	6,000,000
Minnesota.....	500	100,000			
Illinois.....	100	100,000	Total.....	41,000	33,200,000

The locations of hemp growing in the different States at present are as follows :

Kentucky : The blue-grass region within a range of about 50 miles of Lexington.

Ohio : McGuffey, about 15 miles southeast of Lima.

Indiana : Pierceton and Nappanee, in Kosciusko County, about 30 miles west of Fort Wayne.

Michigan : Mentha, in Van Buren County, southwset of Grand Rapids.

Wisconsin : Brandon, Waupun, Fair Water, Markesan, Fox Lake, and Union Grove.

Minnesota : Crookston.

Illinois : Experimental crop in Dupage County.

Iowa : Fort Dodge and Swan.

North Dakota : Cass and Grand Forks Counties.

South Dakota : Aberdeen and Ipswich.

Kansas : Concordia, Hutchison, and Salina.

California : Rio Vista, Stockton, Imperial Valley.

This is the first year since hemp growing was established in the blue-grass region in Kentucky in which the acreage devoted to this crop in other States has exceeded that of Kentucky. The development of the industry is due not alone to the high price of the fiber, 15 to 16 cents per pound as compared with prewar prices of 6 to 7 cents, but also to the introduction of successful labor-saving harvesting machines and a very marked improvement in machine brakes. Manufacturers using hemp fiber are now for the first time offering as high prices for the machine-cleaned fiber as for the hemp of Kentucky broken on hand brakes. In most of the hemp-growing regions outside of Kentucky the growers sell the crop in the form of retted stalks, and are therefore released of the responsibility of breaking and preparing the fiber ,which has always been a rather uncertain and expensive process to the individual farmer.

Hemp is proving a useful crop on the farms, for it kills Canada thistles, quack grass, and other weeds, and when retted on the land where it grows, as is the common practice, it removes very little fertilizer, leaving the land in excellent condition for any following crop.

Hemp is the only fiber aside from cotton that has proved successful on a large scale in this country. There appears to be good hope that flax may do so later, but it has not thus far.

(The following matter was inserted by Representative Young of North Dakota :)

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, January 11, 1918.

Hon. A. F. LEVER,
House of Representatives.

DEAR MR. LEVER: When Dr. Kellerman was before the Committee on Agriculture, Mr. Young of North Dakota asked him to submit to the committee a

[illegible]

[Faint, illegible handwritten notes]

_____ **Dr. J. B. ...**

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

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The diagram illustrates the experimental setup. A subject is seated at a table, looking at a video screen. A video camera is positioned above the screen. A light source is positioned to the left of the screen. A target is positioned on the screen. A ruler is placed on the table. A scale bar is shown at the bottom right of the diagram.

Age Group	No opinion	Not a good idea	A good idea	A very good idea	Don't know
18-24	10%	10%	10%	10%	10%
25-34	10%	10%	10%	10%	10%
35-44	10%	10%	10%	10%	10%
45-54	10%	10%	10%	10%	10%
55-64	10%	10%	10%	10%	10%
65+	10%	10%	10%	10%	10%

The price of phormium fiber in the markets of this country during the past 25 years has varied from 4½ to 13½ cents per pound, averaging about 7 cents, delivered at the spinning mills. Allowing 1½ cents per pound for cost of marketing and transportation, an average yield of 1,200 pounds of fiber per acre for each triennial crop will give a gross return of about \$66 per acre once in three years. This relatively low cash return would preclude its production on high-priced lands.

A trial of some 10 acres in the Santa Clara Valley in California began about 10 years ago, demonstrated that the best land is required to produce the leaves rapidly and in quantity, and on these lands other crops would yield better profits. If a further trial were made, it should be on lands suitable for phormium but lower in price.

A trial on a scale sufficiently large to demonstrate whether the fiber could be produced in this country, not only with profit but with sufficient profit to compete with other crops on the same lands, will require a plat of 10 acres for at least 10 years, a complete outfit of machines, and water supply for preparing the fiber, personal supervision by a competent director, together with necessary labor and minor tools. It is estimated that a trial complete enough to produce definite results would cost about \$3,000 a year for 10 years, or perhaps longer.

Fiber-cleaning machines still in the experimental stage must be obtained in New Zealand or designed and built in this country. A water supply free from alkali and clear must be available in large quantities for soaking the leaves and washing the fiber.

The work probably could be best conducted under the immediate supervision of a man who has had experience in the cultivation of phormium and the production of its fiber in New Zealand.

To summarize briefly, there are numerous unsolved problems involved, and the cost of producing phormium fiber seems high, and the fiber of phormium appears to be inferior to Yucatan henequen or Hawaiian sisal for binder twine.

Yours, very truly,

K. F. KELLERMAN,
Associate Chief of Bureau.

The CHAIRMAN. Take up No. 93, "For the investigation and improvement of fruits, and the methods of fruit growing, harvesting," and then you omit some language and add new language "and in cooperation with the Bureau of Markets studies of the behavior of fruits during the processes of marketing and while in commercial storage, \$85,280." There is a small increase of \$2,000.

Dr. KELLERMAN. A small increase. There is practically no change in the item, although there is quite a change in the wording. The greater portion of the work to which the new language refers is now carried on by the Bureau of Markets, being primarily a question of the actual handling of these products. There are certain technical investigations of the life processes and behavior of the fruits in storage—just exactly what conditions injure them least, what conditions injure them most, and what fundamental conditions must be met for successful handling—that we are continuing because these problems primarily concern the production phase of the work—more so than its marketing side. This work is of rather recent development, and in cooperation with the Bureau of Markets we desire to devote a little more attention to it than we have been giving and are therefore asking for an increase of \$2,000, which will provide for an assistant and some additional laboratory expenses.

The CHAIRMAN. You have a proviso that \$9,000 of this amount shall be available for the investigation and improvement of the pecan and methods of growing, harvesting, packing, and shipping of same. That proviso was put into this bill in the Senate. I wonder if it is at the right place?

Dr. KELLERMAN. The work on the pecan at the present time has been such that it belongs in this item. It has been almost entirely a

question of the breeding and establishment of the standard types of pecans and is, therefore, I think, properly placed here. Comparatively little has been done except in that line.

The CHAIRMAN. You study under this item the best types of the pecan?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. In another item, which we have already passed, you study the diseases of the pecan?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. Then in the Bureau of Entomology a study of the bugs of the pecan is provided for?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. There are three separate items inserted in the Senate touching the pecan. I hope they are properly placed.

Dr. KELLERMAN. In most of our special stock work there is rather close cooperation both with the Bureau of Entomology, where handling, transportation, and storage are concerned, with the Bureau of Markets, and where questions of diseases are of importance, as well as questions of methods of growing, with different branches of our own bureau.

So, in most cases, this plan of piecing out these different problems to different sections of the department will be in effect. It is not often, however, that the particular item is put in a special proviso.

The CHAIRMAN. I think it is unfortunate that it should be so at any time.

Dr. KELLERMAN. I think so myself. I think it would be more satisfactory if these special provisos were omitted.

The CHAIRMAN. This language can be stricken out and the amount allowed, and you would do the same work?

Dr. KELLERMAN. Yes, sir; we would do the same work.

Mr. HAUGEN. With what success are the paper-shell pecans growing?

Dr. KELLERMAN. They are grown with great success, yet there have been a good many difficulties in connection with the paper-shell pecan. Some varieties have been produced with shells so delicate that they were unsatisfactory, and those have been crossed with the harder-shell varieties in an attempt to get a pecan of the best type. Then, although some types of pecans seem to be very promising, some have proved to be rather susceptible to storm damage.

Mr. HAUGEN. Then, the prospect of success is fairly good?

Dr. KELLERMAN. Very good.

Mr. HUTCHINSON. Did they grow the usual crop this last year?

Dr. KELLERMAN. The crop was a little low.

Mr. HUTCHINSON. I noticed the price was higher, and I wondered what the reason for it was.

Dr. KELLERMAN. There were a good many reasons, but the primary cause was the early autumn frost.

The CHAIRMAN. Any further questions? If not, take up item 94, to cultivate and care for the gardens and grounds of the Department of Agriculture in the city of Washington, etc. That is a standing overhead charge, and you are doing the same character of work as heretofore?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. Any questions on that, gentlemen? If not, take up item 95, "for horticultural investigations, including the study of producing"—then, you omit the words "handling and shipping" and add "and harvesting"—then continue "truck and related crops, including potatoes,"—and then you add "and, in cooperation with the Bureau of Markets, studies of the behavior of vegetables while in the processes of marketing and in commercial storage," etc. You seem there to have a decrease, but it is not a decrease at all; it is merely a transfer.

Dr. KELLERMAN. There is no change in the item.

The CHAIRMAN. But you have changed your language in order that the Bureau of Markets may take over certain work?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. Any report on this item, doctor, of special interest?

Dr. KELLERMAN. One special item should be noted. Of course, the general work of improving the various vegetable crops, attempting to get the better yields in varieties of tomatoes, cabbage, lettuce, etc. is being continued, but during the year unusual attention has been devoted to a few crops. The peanut is one of the crops. We have devoted a great deal of time to cooperation with the States Relation Service and with the county agents in extending the planting of this crop and in aiding in the preliminary work in the utilization of peanuts for oil manufacture. We are also now devoting more attention than ever to the selection of the types of peanuts that are best adapted to the different regions so that both yield and quality of the different regions that are now taking up the peanut as a new crop will be as satisfactory as possible from the outset. In addition, we are devoting special attention to the potato crop through cooperative organizations and the county agents and others interested. During the past year there has been, in many regions, loss from field diseases and storage rots. There have been many areas, normally satisfactory producing areas, that at the present time would not give satisfactory seed potatoes. Our people have spent a great deal of time in the field calling attention to the necessary points in selecting the fields of potatoes that should be saved for seed and have aided in preventing those potatoes from getting into immediate consumption. We hope that this activity will show its results the coming year in a better and more disease-free potato crop.

The CHAIRMAN. Any questions, gentlemen?

Mr. HUTCHINSON. Has the department ever taken up the matter of raising second-crop seed exclusively?

Dr. KELLERMAN. That has been tested out quite a good deal. In general, we could hardly advise that.

Mr. HUTCHINSON. In our section it is doing as well again as the other.

Dr. KELLERMAN. Is that so?

Mr. HUTCHINSON. Yes.

Dr. KELLERMANN. That will be true for some special regions. That would not be true for the southern region, although it is found profitable in Pennsylvania, Kentucky, Arkansas, and Oklahoma. There are many districts where that advice would not work out satisfactorily.

Mr. HUTCHINSON. In our section, when they grow a second crop they go over the field and take up anything that is not pure and get a pure seed, and we get a yield of from 70 to 100 bushels where we use second-crop seed.

The CHAIRMAN. What is your yield from the first crop?

Mr. HUTCHINSON. It runs generally from 150 to 300 bushels.

Mr. JACOWAY. That depends on whether you get potash?

Mr. HUTCHINSON. Yes.

Mr. JACOWAY. Does it require any particular skill to build the average potato house on the average potato farm?

Dr. KELLERMAN. There are certain points that have to be kept in mind. I believe the heaviest losses with potatoes come from carelessness in handling the potato rather than from faulty potato houses.

Mr. JACOWAY. You mean from bruising them?

Dr. KELLERMAN. From injuring them and not protecting them from frost.

Mr. JACOWAY. The reason I ask the question is that in my district there has been some attention paid to diversified farming, and they put in vast amounts of sweet potatoes especially.

Dr. KELLERMAN. Sweet potatoes have to be stored very carefully; not at all like Irish potatoes.

Mr. JACOWAY. That is what I had reference to. The complaint is made that when they open the houses in which they have put the sweet potatoes they find that a great many of the potatoes have black checks on them and have deteriorated. Can you suggest anything to prevent that?

Dr. KELLERMAN. The sweet potato is really a delicate stock to store. It must be handled with rather unusual care. In the first place, sweet potatoes must be harvested at about the right time. If they are left in the ground after frost they are likely to be a little too wet and spoil more readily. If they are handled roughly, of course, they spoil. If they are put into a storage house that is too cold they will spoil quickly. If the storage house is too hot, they will spoil. During the preliminary storage period, which is really a curing period, the temperature must be just a pleasant summer temperature—about 80°—and with good ventilation.

Mr. JACOWAY. Hasn't the department some process whereby a given number of pounds of potatoes are crushed in the manner that apples are crushed to make cider to determine the percentage of moisture, and from the knowledge thus gained you are able to tell the farmer how long he should cure his potatoes in his house and at what degree Fahrenheit he should keep it going in order to preserve the potato and to keep it in good condition until spring?

Dr. KELLERMAN. We have that matter, I think, very well worked out, and the directions must be followed very closely, although they are not at all difficult. The question of the amount of curing necessary we can determine fairly well by noting when the sprouts begin to show on the surface of the potato. This usually is about two weeks. They can be stored then at the cooler or keeping temperature, which should be between 50° and 60°. The work is simple, the storage houses are simple in construction, but the work must be followed pretty closely.

Mr. JACOWAY. Into what kind of containers would you put these potatoes when they are placed in the storage house, or would you put them in any?

Dr. KELLERMAN. It would depend to a great degree on how many potatoes are to be stored. If they are to be stored in very small quantities they can be put in baskets. If they are to be stored in large quantities, they can be put in bins, just so the potatoes are not handled roughly. The bins would have to be of such size that they would be small enough for the potatoes to be handled rather gently.

Mr. JACOWAY. Can you give the dimensions of the bin?

Dr. KELLERMAN. The exact dimensions are given in our publications on this subject; probably 4 by 8 by 6 feet.

Mr. JACOWAY. But you do suggest digging these potatoes before the frost falls on the vine?

Dr. KELLERMAN. Yes. That seems desirable, though perhaps not necessary. It would be simpler to handle the curing process if that is done.

Mr. HUTCHINSON. Has not the soil a great deal to do with the behavior of potatoes in storage? In other words, a sweet potato that grows on heavy land will not keep as well as others.

Dr. KELLERMAN. That is probably due to the moisture, the heavy land being usually more moist.

Mr. HUTCHINSON. In other words, the rule will not apply to all cases?

Dr. KELLERMAN. No; but it is very easy to make an approximate allowance for the different kinds of soil.

Mr. YOUNG of North Dakota. Do you put potatoes in pits?

Dr. KELLERMAN. Irish potatoes will keep very well in pits, but sweet potatoes will not.

Mr. YOUNG of North Dakota. I know I lost 8,000 bushels. We did not know how to handle them.

Dr. KELLERMAN. Irish potatoes?

Mr. YOUNG of North Dakota. Yes.

Dr. KELLERMAN. Were any of those potatoes frozen when they were put in? That has been one thing that has caused heavy losses—putting in a few frozen potatoes when the others were sound. The frozen potatoes will start a rot that goes all through them.

The CHAIRMAN. Take up item 96, for continuing the necessary improvements to establish and maintain a general experiment farm and agricultural station on the Arlington estate, in the State of Virginia, etc. There is no change in that item and your work is of the same character as heretofore?

Dr. KELLERMAN. There is no change in the work at all. It is continuing.

The CHAIRMAN. Any questions on that, gentlemen? If not, take up item 97, for investigations in foreign seed and plant introduction, including the study, collection, purchase, testing, propagation, and distribution of rare and valuable seeds, etc. There is no real change in that item. Has the character of that work changed at all?

Dr. KELLERMAN. There is practically no change in this work. In cooperation with our Office of Drug and Related Plants, some special attention is now being given to securing all the varieties of castor-oil bean seed. Practically no new introductions are being

brought in at the present time, nothing except incidental introductions, most of which have been arranged for some time before.

Mr. JACOWAY. In the testimony before the committee on the citrus canker it was shown that the disease was introduced into the United States simply because proper care had not been taken at the port of entry. In other words, there was laxity in the enforcement of the quarantine laws. In bringing in these bulbs and plant introductions, etc., mentioned in item No. 97, has the supervision of this branch of the Agricultural Department been increased in any way so as to make it more rigid and prevent the introduction of new diseases when bringing in new plants and new shrubs?

Mr. YOUNG of North Dakota. It must be, or they would not have stopped the shipment of New Zealand flax.

Mr. JACOWAY. I was asking the question for the benefit of the gentleman, because we will get that flax.

Dr. KELLERMAN. I would like to say, first, that the citrus canker came in before we had a quarantine law, so at that time there was no opportunity for examination of plant material at the ports. At present unusual precautions are taken in all departmental importations. Everything that is imported by the Department of Agriculture is brought to a special quarantine house and is opened there by experts, who are taking all of the precautions that would be taken in any hospital for contagious diseases. All these importations are examined both by entomologists and plant pathologists, and where there is any reason to even feel a suspicion of a particular plant, it is either destroyed or placed in a quarantined greenhouse that is visited only by experts to make their examinations and determine whether this plant is infected or is a safe plant to put out at our propagating stations. At the present time I think it would be difficult to take more precautions than are being taken in these introductions.

Mr. YOUNG of North Dakota. Would there be a sufficient amount under this appropriation to take care of the importation of some of this New Zealand flax seed and give it a try out?

Dr. KELLERMAN. Yes. It would cost comparatively little to import a sufficient quantity of the seed to make a seed test.

Mr. YOUNG of North Dakota. Would this appropriation need to be increased a little to cover that?

Dr. KELLERMAN. This would not need to be increased to cover that. That we could handle largely by correspondence. I think the expense of collecting that seed would be so slight that we could handle it as part of our routine in bringing in foreign plants, especially since at the present time we are cutting down a good deal of our foreign work.

Mr. YOUNG of North Dakota. That is encouraging.

The CHAIRMAN. Take up your next item. Item 98 is omitted because you have accomplished the purpose for which this appropriation was made, which was the purchase, preparation, and irrigation of certain land at Chico, Cal. Out of what fund are you paying the overhead expenses of that station?

Dr. KELLERMAN. Out of the fund immediately preceding that; out of item 97.

The CHAIRMAN. About how much are the overhead expenses?

Dr. KELLERMAN. The overhead expenses of this particular area would be hard to segregate from the overhead of the entire station.

It would probably amount to the time of about 14 men and labor and teams for a short time; in all probably about \$14,500 for the entire station.

The CHAIRMAN. Item 99, for the purchase, propagation, testing, and distribution of new and rare seeds, etc. There is no change in that item?

Dr. KELLERMAN. There is no change in that item.

The CHAIRMAN. And the same character of work is being carried on as heretofore?

Dr. KELLERMAN. The same character of work is being carried on as heretofore, with the possible difference that rather more attention than usual is being devoted to the pasture developments.

The CHAIRMAN. I am glad you mentioned that, Doctor. There is a movement to graze the cut-over lands in the South Atlantic States particularly and in some of the Gulf States. I have had some very interesting gentlemen talk to me about that matter, and they seem to have an idea that the department has made practically no study of the pasturage situation and that there is practically no available information on the subject. What have you to say about that?

Dr. KELLERMAN. Although quite a good deal of attention has been given to pasture problems, the question of the cut-over lands, I think, has been more or less neglected. It has seemed rather more important to develop the pasture grasses that could be used in farmsteads than on these lands that are more comparable to the range lands. With the development of the interest in cattle production in this area, the importance of these lands as potential cattle-producing lands will probably increase, and it will be necessary for us to devote more attention than we have been doing to the types of grasses best suited to these cut-over lands.

The CHAIRMAN. If my recollection is good this morning, I think I was told that probably 150,000 head of cattle had been brought from the West into your State (Georgia), Mr. Lee, in the last five or six months. I also talked with a large sheep grower from Arizona, I believe. He is proposing now to transfer a lot of sheep from that over-grazed country into this section of the country, where we have fairly good grasses, he thinks, and it is probably a more immediate problem than the department has figured on.

Dr. KELLERMAN. I think it is assuming very important proportions. As I say, we have not been devoting much time to this because it has heretofore seemed to be something that would not be pressing for a very considerable time.

The CHAIRMAN. I appreciate that, of course. I do not offer the suggestion in the way of criticism at all, but if there is such a movement, a real genuine movement of cattle and sheep in that direction, it would seem to me that the department might with profit begin a pretty extensive study of the pasturage situation, so as to take care of the incoming sheep and cattle.

Mr. HAUGEN. Would not the introduction of quack grass help out the situation? That seems to grow anywhere?

Dr. KELLERMAN. No; that would not be a complete solution, I am afraid. The conditions in the cut-over pine lands are rather peculiar. There are a good many types of lands and good forage grasses would be more or less in competition with the brush and with the young pines.

Mr. HAUGEN. Generally it is of inferior quality?

Dr. KELLERMAN. Generally cut-over lands are of inferior quality.

Mr. RUBEY. A year or two ago the department sent a man down to my State to investigate as to the kinds of grasses to grow on cut-over lands. The stockmen are now bringing in thousands of head of sheep and putting them on that land. They have done a good deal of work along that line.

Mr. HARRISON. They are doing a great deal of work in Florida. When the interest in tick eradication there became so acute, we sent several men down there, and about a half a dozen of the department's representatives attended the cut-over land conference which was held at New Orleans last year.

The CHAIRMAN. Take up item 100, general administrative expenses connected with the above-mentioned lines of investigation, etc. There is no change in that item. Of course, the character of work is the same?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. The next item is No. 101, for congressional seed. There is no change in that appropriation, is there, Doctor?

Dr. KELLERMAN. No.

Mr. HAUGEN. You have changed the amount of the supply, haven't you?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. For the record, I wish you would explain why the congressional supply has been reduced somewhat, Doctor. It will be asked, I am sure.

Dr. KELLERMAN. The seed supply of the country has been somewhat scanty for some little time. There has been an actual shortage in a few kinds of vegetable seed, and there has not been the ordinarily abundant supply of any of the varieties, and, accordingly, the prices for seed have been high. The surplus stocks of seed produced by the seed growers have been comparatively insignificant. Under the circumstances the department has been forced to pay considerably higher prices for seed than has been the case heretofore. This, with a fixed sum for carrying the distribution, left no course open but the decrease in the allotments.

The CHAIRMAN. Any questions on that?

Mr. LEE. If we continue this free-seed distribution—and I think we will—don't you think it would be advisable to increase the amount of this appropriation to meet the demand? It is rather embarrassing—I know it is to me—to have just half enough seed to go around; and I presume that is the experience of most of the Members of Congress.

The CHAIRMAN. I presume Dr. Kellerman would hardly care to answer that question, because that is a matter of policy which the committee itself should consider.

Mr. THOMPSON. If you keep up this distribution, with the high prices prevailing, you will have to increase this appropriation?

Dr. KELLERMAN. I would not like to make any recommendation in this matter, but it is true, if the quotas are to be maintained at their former level or even at their present level, this fund would not be adequate.

Mr. HAUGEN. How much of an increase would be required?

Dr. KELLERMAN. It is almost impossible, at the present time, to get a close estimate even on that. With the very considerable increase in prices of the many varieties of seed, it is probable that an increase of 50 per cent might be necessary to hold the quotas at their present size.

Mr. HAUGEN. How much is the quota this year below what it was before—a third?

Dr. KELLERMAN. Not quite that. It is reduced about a fifth.

Mr. HAUGEN. Then it will be necessary to almost double it in order to bring it up to the 25,000?

Dr. KELLERMAN. I hardly think it would be necessary to double it to bring it up to the 25,000, although we have not figures yet for reliable estimates.

Mr. THOMPSON. But the price cuts some figure, too?

Dr. KELLERMAN. The price is increasing, so that it would probably take a 50 per cent increase. It would be practicable to give a more accurate guess at the probable condition of the seed supply a little later in the season. Just at the present time it is very difficult to get any clear idea of what the conditions will be.

Mr. HUTCHINSON. Is the seed available now provided you had an increased appropriation?

Dr. KELLERMAN. At the present time I think it is. I believe the seed supply is close to the actual requirements of the country, whereas it is usually somewhat above the actual requirements; I think at the present time there is no reason to expect any actual shortage.

Mr. HUTCHINSON. These seeds, as I understand, are grown under contract?

Dr. KELLERMAN. A considerable portion of the seed supply each year is grown under contract, but a considerable portion is what we call surplus stock seed, which we purchase from seed growers who, for insurance on their own seed supply, have grown a considerably larger quantity than they expect to use in their own business.

Mr. HUTCHINSON. That accounts for some of it not coming up.

Mr. CANDLER. Does the department grow any seed at all?

Dr. KELLERMAN. No, sir.

Mr. CANDLER. It does not grow any of the seed for congressional distribution?

Dr. KELLERMAN. None of that seed, with the exception of occasional small quantities of experimental seed.

Mr. CANDLER. All of the seed that is purchased is thoroughly tested?

Dr. KELLERMAN. All seed is very carefully tested.

Mr. CANDLER. And it is required to come up to a certain standard of production, vitality, and everything of that kind?

Dr. KELLERMAN. Yes. All of the seed purchased must conform to a very high standard, both as to variety and as to ability to germinate, and must be free from troublesome weed seed.

Mr. CANDLER. What standard is that? What percentage is that?

Dr. KELLERMAN. With reference to the weed seed, it has to be approximately 98 per cent pure. With reference to the germination, it varies with the different seeds. Some seeds are not required to have quite so high a germination; on the average, though, they must be from 80 to 85 per cent germinable.

Mr. CANDLER. And if upon examination it does not run that standard, it is rejected?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. I had a good many complaints about the smallness of the packages of cotton seed that you sent out. I think you send them out in quart packages, don't you?

Dr. KELLERMAN. Yes, sir.

The CHAIRMAN. Farmers complained that it does not give them a sufficient quantity to make a proper test, and the result has been that they will either make a hen's nest out of the seed or give them to their neighbor. I wonder if you have thought of that proposition. I suggest it to you for your consideration, at least.

Mr. CANDLER. Some of them are not planted for that reason. I was talking to a man from my district the other day and he said that the quantity of seed sent was not enough to make a test, and therefore he did not plant it, and if I would send him another package he would plant it. I think, myself, to increase that amount would be very beneficial in securing the very thing desired by the department.

Mr. LESHER. And send out fewer packages.

The CHAIRMAN. Yes; send out fewer packages. I believe that is the judgment of the people here.

Dr. KELLERMAN. That would appear to us to be very desirable; we appreciate that those lots are not very large.

DEMONSTRATIONS ON RECLAMATION PROJECTS.

The CHAIRMAN. Gentlemen, we have just one more item, on page 201 of the estimates, and then we will conclude with Dr. Kellerman. It is item 1, under the miscellaneous section of the bill, to enable the Secretary of Agriculture to encourage and aid in the agricultural development of the Government reclamation projects; to assist, through demonstrations, advice, and in other ways, settlers on the projects; and for the employment of persons and means necessary in the city of Washington and elsewhere, \$48,600. That is an apparent but not a real decrease. Have you any progress to report in that regard?

Dr. KELLERMAN. This work, I think, has been peculiarly successful during the past year. The purpose of this work is to increase the productiveness of the farms of settlers on Government reclamation projects, to extend to them the very best farm advice, and to aid these different reclamation projects in establishing satisfactory productive agricultural industries. On the reclamation projects representatives of the bureau are working in very close cooperation with the farmers, and the improvement of the farms in these regions appears to be directly traceable to this work. There has been an improvement in dairy and other live stock, especially in the production of hogs and in the protection of them against diseases. The development of the crops for producing the necessary feed and forage for the live stock has been progressing more and more favorably.

The CHAIRMAN. Any questions, gentlemen? Any further statements, Doctor?

Dr. KELLERMAN. I should probably call attention to one item in connection with this one—the recommendation to purchase one automobile for use in this work. That will be found on page 208. The item at the top of the page is the one recommended, and perhaps that will be sufficiently well understood without an explanation. The committee, I think, knows that we have found it a practical necessity in the effective work of these agents to have them equipped with light automobiles and to have them thus able to cover an amount of territory that they could get over in no other way. This recommendation is quite in line with the recommendations of earlier years, when cars for different projects have been purchased.

The CHAIRMAN. This car will be used in the field service?

Dr. KELLERMAN. It will be used entirely in the field service and only in the work covering that particular project. It will be used only for the official work of extending farm advice.

Mr. JACOWAY. How many hours a day would this automobile be in use?

Dr. KELLERMAN. On the average, it would be four or five hours a day, running time. There would be a very great variation in that. Some days, of course, the man may visit near-by farms and not use the automobile at all. There may be a call because of some threatened outbreak of hog cholera at some distant part of the project, and he may travel all night. The agent attempts to cover the project in whatever way seems to be necessary in protecting the settlers from any losses that are preventable, whether they are losses resulting from bad cultural practice or losses resulting from diseases of live stock or plant diseases. He is just a sort of a general adviser and he has to go to the regions where he is most needed. Sometimes he is traveling practically all the time and other days he would be traveling very little, if at all.

Mr. JACOWAY. As a general proposition, how much area would this automobile cover?

Dr. KELLERMAN. The man will average 30 to 40 miles a day.

Mr. JACOWAY. Would the average be 40 miles a day?

Dr. KELLERMAN. Pretty close to 40 miles a day.

Mr. RUBEY. If he goes from place to place and goes quickly, he is thereby enabled to spend more time in his investigations and in giving his instructions and things of that sort?

Dr. KELLERMAN. We figure that a man with an automobile is worth about four men.

The CHAIRMAN. Is there anything further, gentlemen? Is there any further statement you wish to make in reference to your work, generally, Doctor?

Dr. KELLERMAN. I would like to say, in general, that we believe one of the serious leaks in the Nation's producing capacity is the annual loss from plant disease, and I rather emphasize this because during the year I think it will be necessary for us to devote unusual attention to the attempt to protect the existing farm crops against the preventable diseases by direct advice and by every method that we can employ in cooperation with the State agencies.

Mr. YOUNG, of North Dakota. You hope to give a lot of attention to black rust?

Dr. KELLERMAN. We are planning to do that.

Mr. JACOWAY. It is not in line with your work, but I would like to ask you what you think about putting a building in between the two wings as now completed down there at the department and as near as possible throwing the activities of the Agricultural Department all under one roof? There has been some talk of that.

Dr. KELLERMAN. I think that all of us in the department would like such a plan very much, indeed.

Mr. JACOWAY. As to the economics of it, what do you think of it? Would it increase the efficiency of the department? Would it be a good thing for the agricultural interests of the United States? What is your idea of it?

Dr. KELLERMAN. I think there is no question but what it would be an advantage to the department. As to the economics of it, that is a question that I rather hesitate to discuss, because that can only be determined by very careful consideration of existing supplies of labor and materials.

Mr. JACOWAY. I am speaking about normal times.

Dr. KELLERMAN. During normal times there is absolutely no question about it.

Mr. JACOWAY. The activities of the Agricultural Department are scattered over two or three hundred acres, and messenger boys and other overhead charges would be considerably cut down, and the amount of rent that the United States Government is paying for outside buildings could be used in paying for this new improvement, the same as you buy your home on the building and loan association plan. The amount of money the Government is paying for rent amounts to approximately \$165,000 a year, as I understand, and that could be applied to erecting this building on the same plan as you would construct a home in the building and loan. Is that your idea?

Dr. KELLERMAN. That is it.

Mr. HARRISON. I would like to say that the estimates of the Bureau of Plant Industry, taking into consideration the further decrease in the white-pine blister-rust appropriation, suggested by Dr. Kellerman, represent a decrease of approximately \$302,000.

(Thereupon, at 12.35 p. m., the committee took a recess until 2 o'clock p. m.)

SUMMARY OF PRINCIPAL ACTIVITIES OF THE BUREAU OF PLANT INDUSTRY.

1. INVESTIGATIONS OF DISEASES OF PLANTS.

(a) *Laboratory of Plant Pathology.*—Under this item there are two general lines of work, namely, general laboratory investigations and special investigations. General laboratory investigations included a study of the life history of fungi and bacteria parasitic on plants with a view to discover means of prevention and remedies for various diseases. The studies included under this heading are bacterial wilt of tobacco and cucurbits; the alternaria leaf disease of cucurbits; diseases of pond lilies; root rot and similar root diseases of tobacco in the Southern States; bacterial disease of hard wheat in the West.

These studies have demonstrated the following points:

The wilt disease of tobacco, tomatoes, potatoes, and eggplant is due to the same organism. Other cultivated plants, including the nasturtium, are subject to the same disease.

There is a general distribution of the bacterial disease of sweet corn. Mercuric chloride is a preventive to a certain extent, at least where the germicide can be brought into contact with the disease germ.

Crown-gall studies have demonstrated that the germ used to produce ordinary crown-gall will produce an entirely new type of tumor when the inoculation is made under certain conditions.

An important result has been in determining the fact that the organism causing the bacterial wilt of cucurbits is carried over winter in the bodies of certain of the striped cucumber beetles. The results in the case of the bacterial wilt of cucurbits seem to indicate that there is a possibility of controlling the disease, although the work has not gone far enough to definitely determine this point.

The work in relation to the alternaria leaf disease of cucurbits has been continued, but no definite results have been accomplished as yet.

The studies of the diseases of pond lilies have been practically completed; the life, history, biology, and control of leaf-spot have been worked out.

The studies on the bacterial disease of hard wheat have not gone far enough to warrant very definite results. This work is being continued, as is also that of corn disease.

The funds allotted to this work during the present year and the amount estimated for next year are shown by projects, as follows:

Projects.	1918	1919
General laboratory investigations.....	\$14,816	\$18,893
Special investigations.....	29,034	24,957
Total.....	43,850	43,850

(b) *Plant-disease survey.*—This work was organized as a specific line of work in the Bureau of Plant Industry July 1, 1917, with the following objects: To record the geographical distribution, annual prevalence, and rate of spread of diseases of economic plants in the United States, and to estimate the amount of loss occasioned by them; to discover new and possibly dangerous diseases as soon as possible after introduction into the country, so that restrictive measures may be advised; to study epidemics and unusual outbreaks of disease; to make all data collected immediately available to all interested therein; to maintain close relations with pathologists and agriculturists generally, and to cooperate with them by furnishing data needed in their studies on the nature and control of plant diseases.

Since July 1, 1917, the following results have been accomplished:

(1) The State plant pathologists in every State but one have been made collaborators, and with them as local leaders the bureau is establishing cooperative relations with all pathological workers, thus collecting such data on diseases and fostering a spirit of cooperation amongst pathologists generally.

(2) Close relations have been established with the various offices of the Bureau of Plant Industry and effective cooperation is maintained with them by furnishing data needed in research and extension work.

(3) A large number of personal inquiries regarding plant diseases have been answered; eight numbers (131 pages) of the Plant Disease Bulletin, a mimeographed publication issued semimonthly and devoted to the dissemination of the information collected on plant diseases have been published, this publication having met with a very favorable reception both within and without the Department of Agriculture; a summary of all data collected for 1917 is now being prepared with a view to its publication as a bulletin of the Department of Agriculture.

(4) A field survey was conducted during September and October in close cooperation with the Office of Cereal Investigations on the corn disease caused by *Physoderma zeae-maydis*. During the last two years this disease was found to be generally distributed through the South Atlantic and Gulf States and was reported as very serious. It was not known to occur north of the Carolinas and Tennessee nor west of the Mississippi, but potential menace to the corn States of the North and West was producing serious uneasiness in view of the enormous losses known to be caused by similar diseases in the Orient and the general uncertainty regarding the nature of the disease in the Southern States. The disease was found to exist as far north as New Jersey and Minnesota and as far west as Nebraska and Oklahoma, including all the great corn-raising States. Fortunately, it was found that the disease does not cause great damage ex-

cept in certain southern localities with considerable moisture and continuous high temperature, especially during the early part of the corn season. The uneasiness regarding this disease has thus been dispelled by determining its distribution and by clearing up the uncertainty as to its destructiveness, and much valuable information as to its nature has been obtained, all of which has been placed at the disposal of those investigating the disease.

The funds allotted to this work during the present year and the amount estimated for next year are shown by projects, as follows:

Projects.	1918	1919
General survey of plant diseases.....	\$8,500	\$8,020
Pure-culture supply laboratory.....	1,500	1,500
Total.....	10,000	9,520

(c) *Pathological collections.*—During the past year this office has greatly increased the value of the collections by the addition of many hundreds of specimens acquired by purchase, by exchange, or as collections by members of the office. These collections have been identified, verified, or merely inserted, as the condition required. A special effort has always been made to secure a large number of foreign species of extreme pathogenic interest. This policy has as its direct object the securing of definite knowledge of foreign plant diseases in order to prevent their establishment in this country on new plant introductions.

A considerable proportion of time has been given to the revision of families or genera according to recent monographers. As the life histories of species are worked out and the relationships of different forms demonstrated the specimens in the collection are changed to conform with the most recent information.

In the spring of 1917 the office issued Farmers' Bulletin 796, entitled "Some Common Edible and Poisonous Mushrooms." As the title suggests, this is a nontechnical paper and intended to furnish popular information on this subject. This bulletin was prepared in response to the continual and numerous requests for information on this subject.

At the very urgent requests of many mushroom growers various phases of the subject of mushroom cultivation have received attention during the past year. Some of the problems under investigation have related to the preparation and handling of pure spawn, the chemical composition of manures, artificial stimuli for spawn, fumigation methods for fungous diseases, methods of drying and canning mushrooms for market and home consumption, and other related subjects.

Technical and practical studies have been made of two serious diseases of roses. The fungi causing these diseases have been isolated and their life histories are still subjects of investigation. An apparently new disease of palms has been a subject of study during the past year and is still under observation.

The bibliographical value of the collections has been greatly increased by the addition of hundreds of translations and abstracts of foreign and American scientific publications.

The most critical work of the office has been concerned with the identification or verification of fungi which have been submitted by monographers, pathologists, or mycologists. This work is of such an exacting nature that it is generally necessary to grow the organisms artificially in order to determine their taxonomic position.

This project carries an allotment of \$8,650 for the current fiscal year and the same amount is estimated for 1919.

2. FRUIT-DISEASE INVESTIGATIONS.

This subappropriation provides for studies along the lines of general orchard diseases, citrus and subtropical fruit diseases, grape and small fruit diseases, orchard-spraying experiments, fruit rots and spots, and physiological fruit diseases, the object in all cases being to find the cause of the disease and to provide a remedy for it.

The following results have been obtained: Pear blight can be controlled by eradication of the tree affected; peach yellows and little peach can be controlled by eradication; and important steps toward the control of crown-gall disease of fruit trees have been made. Important discoveries in self-sterility of fruits and improved methods of planting orchards to secure cross-pollination have been made. Data have been accumulated and practical experience secured in the control of apple cankers of the United States. Preliminary bacteriological researches have been made in the case of apple black heart. Remedies have been devised for certain pecan leaf diseases by spraying in the nursery and orchard, and progress has been made in the study of the blight of the Persian walnut and of pecan rosette. A better understanding of the injuries to fruit and fruit trees and of the methods of handling frost-injured trees has been secured. In the work on spraying apparatus and spraying efficiency many detailed improvements as suggestions to manufacturers and orchardists have been made. Studies of fungicides for fruit trees have resulted in the important discovery of self-boiled lime-sulphur, and important discoveries as to the comparative merits of different fungicides have been made. Apple cedar-rust studies have shown the importance of destroying cedar forests in the vicinity of the orchards. Methods for the control of the cranberry rots and decays have been developed, and progress made in the study of the parasites causing diseases of grapes, resulting in improvements in the methods of preventing and controlling these diseases. Injury to fruit in handling and from high temperatures have been shown to be the chief causes of diseases and rots developing in picking, packing, and transportation of small fruits. Especial attention has been given to the anthracnose of raspberry, the cane-blight of the currant and gooseberries and orange-rust of blackberries and raspberries. The bacterial nature of citrus canker has been discovered; important knowledge has been obtained of the field behavior of citrus scab and withertip organisms and of die-back, and it has been found that grapefruit scab can be controlled by spraying. Apple bitter-rot and blotch can be successfully treated by late summer spraying. The treatment of brown rot and scab of plums has been perfected and good results obtained in the control of these diseases, on plum as well as on other stone fruits. Improved methods in the control of apple leaf diseases have also been obtained. The sources of spring infection of peach and plum bacteriosis have been located. Combined spraying schedules for the apple and peach in various sections have been perfected and progress made in the studies of Jonathan spot of the apple and related diseases. It has been found that apple-butter-pit can be controlled in irrigated orchards by the method of irrigation used. In deciduous fruit rot investigations a large number of fungi have been isolated and their power to produce rots under various storage conditions have been determined. Additional progress has been made in the study of stigmonose of deciduous fruits, nutritious in relation to fruit diseases, chlorotic diseases of fruit trees, and apple and peach powdery mildew.

The funds allotted to this work during the present year and the amount estimated for next year are shown by projects as follows:

Projects.	1918	1919
Supervision.....	\$3,300	\$2,820
General orchard diseases.....	19,275	17,275
Citrus and subtropical fruit diseases.....	14,440	16,440
Grape and small fruit diseases.....	15,500	14,500
Orchard-spraying experiments.....	5,800	6,800
Fruit rots and spots.....	11,600	12,600
Physiological fruit diseases.....	6,500	5,500
Total.....	76,415	75,935

3. ERADICATION OF CITRUS CANCER.

A citrus canker is a very serious disease of oranges, lemons, grapefruit, and other citrus fruits.

Much progress in the eradication of this disease has been made in the various States, many places formerly infected having been declared clean, and, in cooperation with State officials, vigorous methods are being pursued to eradicate known infections and prevent further spread of the disease.

This work carries an appropriation of \$250,000 for the current fiscal year, and the same amount is estimated for 1919.

4. INVESTIGATIONS IN FOREST PATHOLOGY.

Under this item are included investigations of diseases of shade and ornamental trees and shrubs; study of pathological problems in wood conservation; investigations of diseases of nursery stock; cooperative field studies and demonstrations in forest pathology, the object of which is to determine the best methods of controlling tree diseases, particularly in the national forests; investigations with reference to control, nature, and life history of various tree diseases and of the effects of smelter fumes upon trees; study of imported and epidemic tree diseases, including miscellaneous imported and epidemic tree diseases, such as the white-pine blister rust, chestnut-bark disease, pitch-pine blister rust, etc., with reference to their control.

The investigations conducted have resulted in the determination of weak points in the life histories of certain tree diseases, varietal and specific resistance to disease, the annual occurrence of certain diseases, and standardization of improved methods of tree surgery. Definite information relative to the causes of certain wood decays has been obtained, and methods have been developed for quickly testing toxicity of wood preservatives. A method of testing heavy oils has also been invented. A method of controlling blight of nursery stock has been developed. The "sanitation clause" with reference to Government timber sales has been developed. The real nature and origin of the chestnut-bark disease and its manner of distribution have been determined, the utilization of trees killed by the disease made possible, and resistant and immune strains discovered. New and decisive methods involving new symptoms for identifying doubtful cases of white-pine blister rust have been discovered.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects, as follows:

Projects.	1918	1919
Supervision.....	\$10,287	\$8,007
Diseases of shade and ornamental trees and shrubs.....	4,932	4,932
Pathological problems in wood preservation.....	5,026	5,026
Forest tree diseases.....	27,115	27,115
Miscellaneous imported and epidemic tree diseases.....	38,555	38,555
Total.....	85,915	83,635

5. WHITE-PINE BLISTER RUST ERADICATION.

Shipments and reshipments of imported nursery stock of five-needle pines are located and inspected for the presence of white-pine blister rust. When the disease is found the diseased trees are destroyed by the appropriate State officials; when possible, the entire shipment is destroyed. Secondary infections on currants or five-leaf pines are also located and destroyed. In localities where eradication is no longer possible, such as Massachusetts, local control is attempted by the complete elimination of one host or the other (pines or Ribes), according to which is locally most valuable.

This work carries an allotment of \$254,208 for the current fiscal year and \$246,448 for the fiscal year 1919.

6. COTTON, TRUCK, AND FORAGE-CROP DISEASE INVESTIGATIONS.

There are four general lines of investigation under the above subappropriation, (1) cotton diseases, including breeding for wilt resistance; (2) truck-crop diseases, including diseases of the Irish and sweet potato, study for the malnutrition of truck crops, breeding of rust-resistant asparagus, nematode diseases of truck crops, and diseases of cabbage, cucumber, beans, watermelon, and miscellaneous truck crops; (3) forage-crop diseases, including diseases of cowpea, alfalfa, and miscellaneous forage crops; and (4) pathological extension work.

Some of the important results achieved so far have been the establishment of successful methods for breeding wilt-resistant cotton, the establishment of new types of cotton, and the production of considerable quantities of seed of wilt-resistant cotton and root-knot resistant cowpeas, whereby greatly increased yields of these crops have been made possible. Potato field stations have been established in Idaho, Colorado, and Maine. Important discoveries have been made in connection with late blight, leaf-roll, curly-dwarf leaf, and mosaic dis-

eases of potatoes. The causes of several tuber rots in storage have been determined and progress made relative to the powdery scab of potatoes. The plan of potato-seed inspection and certification has been adopted by additional States. Important sweet-potato diseases studied and upon which considerable progress has been made are dry-rot, footrot, stem rot, and black rot, scurf; various storage rots have also been differentiated. Spinach malnutrition has been studied and the nature of the trouble discovered. Rust-resistant strains of asparagus better than any commercial varieties have been produced. Many tests looking to the elimination of cucumber, cabbage, and watermelon diseases have been conducted and much valuable data accumulated. Important alfalfa diseases have been studied, as well as diseases of clovers and cowpeas. Causes of some of the diseases and control measures have been determined.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects, as follows:

Projects.	1918	1919
Supervision.....	\$6,782	\$4,782
Cotton diseases.....	7,748	8,748
Truck-crop diseases.....	65,470	66,470
Forage-crop diseases.....	4,800	5,800
Pathological extension work.....	3,000	2,000
Total.....	87,800	87,800

7. CROP PHYSIOLOGY AND BREEDING INVESTIGATIONS.

Under this item are included the following lines of work: Cooperative work on Indian reservations, date culture, fig culture, citrus-breeding investigations, investigations in dry-land arboriculture, and miscellaneous investigations, such as pistache culture, investigations in the stimulation of plants, and pineapple breeding.

Important results under this item have been the establishment of the Egyptian cotton industry on the Indian reservations, which has grown from small initial plantings to an industry worth annually several hundred thousand dollars. Many of the common vegetables have also been introduced to cultivation on these reservations.

The artificial ripening of dates has been perfected and systematized in an economic way, and the date palm has become the basis of one of the promising fruit industries of the Southwest, representing an annual investment to growers of over \$100,000.

The Smyrna-fig industry is rapidly spreading in California, several thousand tons of figs being produced annually in that State.

An important result of the citrus breeding work has been the discovery of the comparative canker resistance of the Japanese and other Asiatic pomelos and the satisfactory long-distance shipment of pollen, enabling the department to make hybrids between these pomelos and Florida grapefruit. The tangelo, a promising new orange, the citranges, hardy substitutes for the lemon, and hundreds of new types of citrus fruits now under test are the results of this work.

Investigations of the wild relatives of stone fruits have been carried on, and dry-land olive culture is being given a careful test at Sacaton, Ariz.

The pistache has also been introduced into cultivation in certain sections of the Sierra foothills.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects as follows:

Projects.	1918	1919
Supervision.....	\$1,190	\$590
Indian cooperation.....	13,083	14,083
Date culture.....	14,042	13,042
Fig culture.....	4,060	3,060
Citrus breeding.....	13,200	14,200
Dryland arboriculture.....	2,065	2,065
Miscellaneous, including pistache culture, stimulation treatment, microscopic improvement, pineapple breeding.....	1,420	1,420
Total.....	49,060	48,460

8. SOIL-BACTERIOLOGY AND PLANT-NUTRITION INVESTIGATIONS.

The work under this subappropriation consists of demonstrations of the inoculation of legumes; distribution of cultures for inoculating legumes; inspection of commercial cultures; investigations of the organisms causing decomposition of organic materials in soils; investigations of the nitrifying, denitrifying, and nitrogen-fixing bacteria; study of the relation of soil bacteria to the growth of crop plants; and plant-nutrition investigations, including a special study in this and nutrition of the date palm.

The results obtained under the above investigations have been the securing of information which leads to occasional improvement in methods for the distribution of cultures and for inoculating legumes. The pure-culture method has proved to be equal in efficiency to inoculation by use of old field soil and by the use of these pure cultures of nitrogen-fixing bacteria the quantity and quality of legume crops have been increased throughout the United States. It has been found that the quality of commercial cultures now in the market usually is satisfactory.

It has been found that the formation of nitrate in different soils varies widely under the influence of the green manures, barnyard manures, and crop residues.

It has also been discovered that bacteria develop in regular life cycles, a fact entirely unknown heretofore.

It has further been shown that nutrition conditions of the plant play a leading part in oil production in seeds, and when the work is completed it should be possible to indicate the soil and climatic conditions best adapted to growing oil-producing crops. Calcium sulphate improves the texture of alkali soils and increases the yield and quality of dates. An unbalanced or insufficient supply appears to injure the flavor of cured dates.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects as follows:

Projects.	1918	1919
Supervision.....	\$4,000	\$4,000
Distribution and study of legume bacteria.....	11,050	11,050
Investigations in soil bacteriology.....	13,300	13,300
General investigations in plant nutrition.....	9,850	9,850
Nutrition of the date palm.....	1,100	1,100
Total.....	39,300	39,300

9. SOIL-FERTILITY INVESTIGATIONS.

This item includes studies of the maintenance of soil fertility, causes of unproductive soils, transformation and formation of soil humus by biochemical factors, origin of organic constituents in soils, means for improvement of unproductive soils, and the effect of fertilizers and soil amendments.

The nature of nitrogen and sulphur compounds in peat has been determined. It has been ascertained that green manuring diminishes alkali salts. The relation between powdery scab of the potato and soil type of soil conditions has been determined. Additional organic compounds harmful to crop growth have been isolated from unproductive soils. The relation between soil acidity and hydrogen in concentration has been established and a method of measurement perfected. The behavior of organic fertilizers, like dried blood, in soils has been determined and the significance of protein hydrolysis and synthesis in relation to the availability of the nitrogen ascertained. It has been found that oxidation bears a fairly definite relation to soil fertility. Organic chemical compounds have been obtained from molds and soils identical in composition. The origin of several acids and aldehydes in soils has been determined. Organic matter added to soils has been found to break down along definite lines, yielding compounds some of which had previously been isolated from field soils. The action of various chemicals on crops in the field has been determined, and the effects of one chemical on another studied.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects, as follows :

Projects.	1918	1919
Supervision	\$3,040	\$4,465
Maintenance of soil fertility	7,536	7,536
Causes of unproductive soils.....	5,052	5,052
Transformation and formation of soil humus by biochemical factors.....	6,255	6,255
Origin or organic constituents in soils.....	5,051	5,051
Means for improvement of unproductive soils.....	4,235	4,235
Effect of fertilizers and soil amendments.....	5,091	5,091
Total.....	36,260	36,260

10. CROP-ACCLIMATIZATION AND FIBER-PLANT INVESTIGATIONS.

(a) *Crop-acclimatization investigations.*—The general lines of investigation included under the subappropriation for crop acclimatization and adaptation investigations are the acclimatization of weevil-resistant varieties of cotton, cotton culture under weevil conditions, cotton culture in arid regions, local adjustment and adaptation of cotton varieties, breeding and preservation of cotton varieties, maintenance of improved varieties of cotton in Texas and adjacent States, acclimatization, adaptation, and extension of corn; and the acclimatization and adaptation of tropic plants.

Superior strains of weevil-resistant cottons have been bred from stock discovered and imported from Mexico and Central America and are being established in cultivation in weevil-infested regions of the United States. An improved system of cotton culture has been developed, making it possible to secure earlier and larger crops in short seasons and in the presence of the boll weevil. Cottons showing improvement in yield, earliness of maturity, and length, quality, and uniformity of staple have been developed. It has been found that outside of the United States corn is grown and produces satisfactory yields under a much wider range of climatic and soil conditions than our varieties permit, and it has been found that a number of these foreign varieties possess adaptations that especially fit them to withstand the extreme conditions under which they have been produced. Through hybridization it has been possible to develop strains having resistance to low temperatures, drought, high winds, and attacks of insects.

Through the work of acclimatization and adaptation of tropical plants many crops have been studied and seeds or propagating material secured, including cotton, corn, potatoes, cassava and other root crops, vegetables, and fruits, such as a hardy, hard-shelled avocado better adapted to commercial production than the variety previously known. Some of these are likely to be of use on the Pacific coast and other districts with cool climates, and others in tropical districts of southern California and Florida.

Several millions of dollars undoubtedly have been saved to the American public by publishing the results of the bureau's investigations of rubber culture, which served as an effective warning against bad investments in planting enterprises, since proved to be worthless.

Studies of coffee, cacao, and bananas have resulted in the discovery of new cultural improvements of importance to growers of these crops.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects, as follows :

Projects.	1918	1919
Supervision.....	\$1,264	\$1,264
Acclimatization, adpatation and breeding of cotton.....	38,166	63,166
Acclimatization, adaptation and extension of corn.....	6,800	6,800
Acclimatization and adaptation of tropical plants	3,850	3,850
Total.....	50,080	75,080

(b) *Fiber-plant investigations.*—Prior to the fiscal year 1918 this item had been carried in the subappropriation for crop technological investigations, the annual expenditure being about \$7,430. For the year 1918 the item was trans-

ferred to the subappropriation for crop acclimatization and the amount increased from \$7,430 to \$32,430, an increase of \$25,000, and a new project, "Production of binder-twine fibers in the Philippines," set up, to which an allotment of \$20,000 has been made. Other lines of investigation have been increased quite materially. The general lines of work conducted under this item are sisal, henequen, and allied plant investigations; production of binder-twine fibers in the Philippines; flax-fiber production; hemp-fiber production; teasel-bur production; and miscellaneous fiber investigations.

Twenty introductions of fiber-producing plants into Porto Rico have been made. Several species of fibers have been tried in southern Florida and Texas. Many different species have been identified and definite information secured regarding special conditions of soil and climate required by the different kinds of plants. More than 100 acres of sisal and henequen are growing in Porto Rico, with propagating stock now available for 1,000 acres. The first systematic work undertaken anywhere to improve sisal and henequens by selection has been begun in Porto Rico. Improved strains of fiber flax has been developed by selection. Contrary to the generally accepted theory, it has been definitely demonstrated that fiber flaxseed fully equal to that imported may be produced in this country. The fiber-flax industry is being developed in Oregon. More than half of the fiber crop and nearly all of the seed crop for 1916 were of improved varieties developed as a result of this work. Progress has been made in the development of early varieties for Wisconsin and other northern States. The supply of seed for growing fiber hemp increased from about 5,000 bushels for the crop of 1914 to more than 40,000 bushels for the crop of 1917, and the acreage has more than doubled during the past three years, the crop sown in April, 1917, being estimated at 40,000, as compared with 3,500 acres in 1913.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects as follows:

Projects.	1918	1919
Sisal, henequen, and allied plants.....	\$5,500	\$5,500
Production of binder-twine fibers in the Philippines.....	20,000	20,000
Flax-fiber production.....	2,500	2,500
Hemp-fiber production.....	2,500	2,500
Miscellaneous fiber investigations.....	1,430	1,430
Teazel-bur production.....	500	500
Total.....	32,430	32,430

11. DRUG-PLANT, POISONOUS-PLANT, PHYSIOLOGICAL, AND FERMENTATION INVESTIGATIONS.

Under this item are conducted (1) investigations of drug and related plants and their products, which includes oil-seed crop production, essential-oil crop production, vegetable-oil investigations, investigations of the active constituents of medicinal plants, commercial production of drug and related plants in the upper Mississippi Valley, investigations of plant-waste products as commercial sources of fixed oils, volatile oils, and other valuable constituents, utilization of drug and related crop wastes, establishment of the camphor industry, hop-improvement investigations, red-pepper cultivation, ginger-growing investigations, investigations of plants yielding tannins and dyes, collection of information on the production and uses of drug and related plants, and miscellaneous field and laboratory work on drug and related plants; (2) poisonous-plant investigations, including a study of the geographical distribution and localization of poisonous plants and miscellaneous studies of poisonous plants; (3) investigations in plant physiology and fermentation, including a study of the physiological action of solutions of organic and of inorganic substances of crop plants, physiological studies of injury to plants by low temperatures, of the effects of storage on fruits and vegetables, the relation of oxidizing enzymes to plant diseases, the relation of molds to the deterioration of plant products, and of the relation of plant parasites to the plant attacked; physiological study of mosaic diseases, physiological studies of the chestnut tree and other plants and of germination, study of the ash constituents of spinach and other plants in relation to conditions of disease, physiological investigations of the effects produced in plants by the cyaniding process, physiological study of the causes of immu-

nity to diseases in plants, and miscellaneous investigation in plant physiology and fermentation.

(a) *Drug-plant investigations.*—Changed economic conditions resulting from the continuation of the war, interference with imports, and increased demand for certain drugs and related products have stimulated widely increased interest in the possibility of introducing drug-plant culture in this country. An unusually heavy demand from all parts of the country for information on the cultivation and handling of drug and related crops has been supplied through bulletins, circulars, and correspondence. It has been possible in many cases to assist growers both in undertaking the culture of these crops on a commercial scale and in successfully introducing them in the market; in many other cases information designed to save expense and effort along wasteful and unproductive lines has been furnished.

In view of the general shortage in fats and oils, special attention is being given to the possibility of introducing oil-seed crops and of utilizing oil-yielding wastes, such as the seeds of the tomato, cherry, peach, prune, grape, and other by-products of the fruit and canning industries. Results of investigations on the utilization of a number of these waste products have been published. Field and laboratory investigations have been carried out on the production and utilization of oil-seed crops, such as sunflowers, castor beans, and sesame, including also several oil-seed crops produced abroad but new to the United States.

In the work of the testing gardens observations have been made on the cultivation and methods of handling of more than 170 species of drug and related plants. Special attention has been given to the cultural problems of belladonna, henbane, and digitalis, three important drugs which have become scarce in the market and high in price, also to the cultivation of drug plants from which authentic materials for herbarium specimens and for standardizing and laboratory investigation can be obtained.

In the Florida work a camphor-harvesting machine has been constructed by means of which the leaves and twigs used in the production of camphor gum can be successfully harvested from the hedges at the rate of 10 or 12 acres per day, reducing the expensive hand labor heretofore found necessary for this purpose. The production of the oil of sweet oranges at relatively low cost has been made possible through the construction of a practical machine which peels the oranges at the rate of 125 per minute.

In South Carolina the cooperative experiments in the production of red peppers, cannabis, sesame, and other drug and related crops were continued, and a practical test of sunflowers as an oil-seed crop was undertaken on an acreage basis.

Results of other investigations, which have been made available through publications, include the production of thymol from horsemint, commercial production of lemon-grass oil, production of sweet-orange oil from waste oranges, improvement of alkaloidal content in belladonna, and the effect of cultural and climatic conditions on the yield and quality of peppermint oil.

Research on the improvement of plant drugs and on conditions most favorable to their production in various parts of this country has been furthered through cooperation in the establishment of drug gardens in connection with the schools of pharmacy of a number of educational institutions.

(b) *Poisonous-plant investigations.*—Investigations of plants poisonous to stock have been continued in cooperation with the Bureau of Animal Industry, the work of the past year having consisted chiefly of poisonous-plant surveys on sheep trails and cattle ranges, where poisoning has occurred, on the national-forest ranges in South Dakota, Oregon, Washington, Idaho, Minnesota, and Utah. In view of the threatened scarcity of digitalis and the very great importance of securing supplies of this drug, a survey was also made of areas of digitalis growing wild in the Northwest, and material from these wild plants was collected for a laboratory study of its active principle content.

(c) *Plant physiological and fermentation investigations.*—Study of the physiological requirements of crop plants has yielded important data on the proportions of nutrient materials necessary to support plant life and on the rôle of calcium and other inorganic chemicals in plant metabolism. Clearer knowledge of the different food requirements of various kinds of crops, which is being gained through these studies, promises to afford a more rational basis for supplying the needs of crops grown on various types of soil. The value of green sand marls as a source of potassium is receiving special attention.

Progress is being made in the study of the physiological and chemical changes in plants exposed to low temperatures, this investigation having been under-

taken with the view of increasing the effectiveness of the "hardening-off" process used by gardeners to increase resistance of cabbages and similar crops to cold. It has been found that frost injury is reduced by means of protective structures which can apparently be accentuated by selective and breeding methods.

Investigations of the physiological changes occurring in sweet potatoes in storage have shown the temperature at which the maximum sugar content can be developed with minimum loss through deterioration and are furnishing information which should make it possible both to improve the quality of this important food product and to prolong the period during which it can be preserved in storage.

Physiological studies of a number of important plant diseases are in progress. The manner in which the organism causing the potato leak disease gains access to the tubers has been ascertained and the method of controlling this disease demonstrated. The probable basis of immunity of certain types of potatoes to this disease has also been shown. In physiological studies of the mosaic disease of potatoes and tomatoes, the transmissible character of this disease in potatoes has been shown.

Investigations on the physiological factors controlling germination of seeds have included work on the effect of various forcing agents upon dormant seeds and on the relation of the catalase content to dormancy.

Other investigations have included study of normal and diseased spinach plants with the view of ascertaining the cause of, and remedial measures for, spinach blight; study of plant pigments found in fruits and vegetables to ascertain the causes of certain color changes which impair the value of these products for canning; also study of the distribution of the toxic principle hydrocyanic acid in plants and the working out of an improved method of detecting the presence of this harmful substance.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects, as follows:

Projects.	1918	1919
Supervision.....	\$3,674	\$3,674
Drug and replated plants and their products.....	24,120	25,120
Poisonous plant investigations.....	2,500	1,500
Investigations in plant physiology and fermentation.....	28,526	28,526
Total.....	58,820	58,820

12. AGRICULTURAL TECHNOLOGY.

This work embraces investigations in free-living and plant-infesting nematodes, agricultural apparatus, illustrations, solar and artificial projection, study of Hawaiian fungi other than cane, fiber and applied technology, and miscellaneous problems in biological technology.

The loss due to nematode injury to sugar beets in the infested district in California during the year 1916 has been estimated at \$228,718, while accurate data would undoubtedly show the loss to be more than \$1,000,000. The areas infested are being treated in a specific way. Imported German and Russian sugar-beet seed have been shown to be infested with free-living, soil-inhabiting nematodes. The gall worm has been shown to cause great loss to the South Carolina cotton crop. The loss to the country, based on the investigations in South Carolina, would probably aggregate \$35 000,000 in round numbers. This worm is the cause of great loss to other crops. The belief is becoming rather widespread that nematode pests may be successfully fought by means of other soil organisms, notably predacious nematodes.

No definite accomplishments have been recorded with regard to the investigations in agricultural apparatus, the investigations having been confined chiefly to indoor apparatus.

Several improvements in methods of producing illustrations for publication purposes have been effected, these being chiefly charting the outline of elongated flexible objects, a practical and less expensive way of lettering drawings, etc. The use of immersion lenses as condensers in certain camera work has proved to be entirely satisfactory, results being obtained in this manner that have not been found obtainable in any other way.

Work has been continued with regard to the physical properties of cotton fibers, such work being confined chiefly with the length and form of fibers, the tensile strength, and hydroscopic qualities of the fibers, all of which has resulted in a clearer understanding of the relationship of the various qualities to the uses to which they are put and the processes they must undergo in the course of manufacture.

Studies have been continued with reference to the root system of economic plants to discover the relationship between them—whether symbiotic, parasitic, etc. The work so far has been confined chiefly to cereals, collecting, sectioning, etc.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects, as follows:

Projects.	1918	1919
Supervision.....	\$4,000	\$4,000
Free-living and plant-infesting nematodes.....	12,600	13,600
Agricultural apparatus.....	240	240
Illustrations.....	(1)	(1)
Solar and artificial projection.....	(1)	(1)
Study of Hawaiian fungi other than cane.....	500	500
Fiber and applied technology.....	5,900	4,900
Miscellaneous biological technology.....	1,700	1,700
Total.....	24,940	24,940

¹ Statutory only.

13. BIOPHYSICAL INVESTIGATIONS.

There are two general lines of work conducted under the above subappropriation, namely, cooperative biophysical investigations and special biophysical investigations.

The work under the cooperative biophysical investigations has dealt largely with the effect of various methods of soil preparation and crop rotation upon the moisture content, temperature, humus content, soluble-salt content, aeration, and other physical properties of the soil, and the securing of data for a comparison of the soil and climatic conditions at the various stations in relation to crop production. An endeavor has also been made to determine by means of field and pot cultures the water requirement of the principal crop plants grown on the various reclamation projects in order to develop a more efficient use of water in irrigated regions. It has been shown through these experiments that the water requirements of plants differ greatly in the amount of water used in the production of a pound of dry plant substance, and different varieties of the same crop often exhibit marked differences in the water requirement.

Under special biophysical investigations the work has dealt with a study of the relation of soil moisture and soil solutions to the growth of plants, including an investigation of the cultural conditions of citrus soils in California and Arizona, with a view to the determination of the cause of mottle-leaf and its control. Development of the work leads more and more to the conclusion that the low humus content of the citrus soils is responsible for most of the trouble in citrus production. Irrigation methods also show that trees in many cases have an insufficient water supply and are seriously arrested periodically in their development due to this cause.

The funds allotted to this work during the present fiscal year and the amount estimated for next year, as shown by projects, are as follows:

Projects.	1918	1919
Supervision.....	\$5,000	\$5,000
Cooperative biophysical investigations.....	15,000	15,000
Special biophysical investigations.....	12,500	12,500
Total.....	32,500	32,500

14. SEED-TESTING LABORATORIES.

Under this subappropriation are conducted seed testing, seed purity, and vitality investigations, adulterated-seed investigations and the enforcement of the seed-importation act.

The seed-testing work has consisted of the testing of samples of seed submitted by firms or individuals to determine mechanical purity or vitality, examination of samples of seeds for the presence of adulterants or dodder, and identification of weed seeds. As many as 20,000 samples of seeds, exclusive of those received in connection with the enforcement of the seed-importation act, have been received and tested.

The seed purity and vitality investigations have consisted of a study of the cultivated species of *Agrostis*, resulting in a description of their distinguishing characteristics. The kinds of seed imported as rape have been studied, and the means of distinguishing the seed of winter rape from its adulterants will be described. The physiology and chemistry of seed germination has been studied with especial reference to seed of Johnson grass, Sudan grass, and Kentucky blue grass. Papers dealing with this investigation are being prepared for publication.

The work in connection with the investigation of seeds as to their adulteration have resulted in the collection of numerous lots of rape and orchard-grass seed. Many of the samples thus collected have been examined and the amount of adulteration determined.

Of the seeds subject to the seed-importation act and offered for import 3,297,397 pounds were prohibited entry, including 3,078,813 pounds of red clover seed, and 48,556,976 pounds were permitted entry either as original shipments or after recleaning. Of the seed prohibited entry 129,708 pounds were exported or destroyed and 763,097 pounds were awaiting final disposition at the beginning of the fiscal year 1917.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects as follows:

Projects.	1918	1919
Supervision.....	\$4,640	\$4,640
Seed testing.....	13,420	14,400
Seed purity and vitality investigations.....	6,500	6,500
Adulterated seed investigations.....	4,400	4,400
Seed importation act.....	5,740	5,740
Total.....	34,700	36,680

15. CEREAL INVESTIGATIONS.

(a) *Investigations of small grains, etc.*—The lines of investigations under this subappropriation are: (1) Production and improvement of cereals, flax, and broom corn and their products, the subdivisions under this general line being wheat investigations, oat investigations, barley investigations, rice investigations, grain-sorghum and broom-corn investigations, investigations in minor cereals, and flax investigations; (2) cereal and flax tillage and rotation investigations; (3) cereal disease investigations, including miscellaneous cereal and flax diseases, investigations of cereal rusts (studies relative to their life histories, physiology, distribution, and control, and the breeding of cereals for rust resistance), investigations of the fungus and nonparasitic diseases of corn, sorghum, and broom corn, except rusts and smuts, and investigations of the cereal smuts.

Information has been secured and published as to the comparative value of certain wheats. Detailed results have been secured from extensive varietal, breeding, and cultural experiments with wheat and other cereals. Experiments in improving the yield and quality of wheats by breeding are yielding good results. Work is progressing on the classification and description of American wheat varieties.

New varieties of spring oats have been distributed through the Cornell and the Iowa experiment stations, and selected stocks of winter oats from the Arlington Farm. The Kherson oats show an increased yield over other varieties of about 4 bushels to the acre.

During the past year pollen of barley was germinated for the first time. The discovery of the condition of germination has resulted in several hundred per cent increase in the number of seeds secured in hybridization. The first distribution of Trebi barley was made, this variety being a product of the breeding nursery, and has proved far superior to local sorts in the irrigated areas of the Great Basin.

New varieties of rice have been distributed for commercial plantings. Hybrids have been produced that are resistant to the disease known as "rotten neck." Control of red rice has been determined by rotations containing cultivated crops, and additional information has been secured relative to the water requirements of rice; the cooking quality of new varieties and strains of rice has also been determined. The rice industry has been established in California through investigations made in the Sacramento Valley.

Seed of adapted varieties of grain sorghums have been distributed to farmers. Eight new lots of sorghum were collected and grown in the classification nursery.

The work with flax has resulted in the improvement of flax through selection and breeding. Foreign varieties of flax have been introduced and their adaptation to different sections studied. The flax acreage in the Northwest has been extended and the winter-flax area in the Southwest is being developed.

Results proving the cross-fertilization of rye have been obtained and natural rye-wheat hybrids have been discovered.

Corn, potatoes, and sorghum have proved valuable as rotation crops with cereals. Field peas have also proved valuable in this connection.

Considerable work has been done relative to the influence of meteorological factors on the development of rust epidemics. Extensive milling and baking tests have been made with reference to a number of rust-resistant hybrids. Progress has been made in the determination of the Physoderma-disease fungus of corn, and its distribution has been found to be general throughout the Southern States. A Fusarium disease of corn is found to be quite serious in Illinois and Iowa. Work in the study of foreign corn mildews is being undertaken. Methods of prevention of bunt, or stinking smut, of wheat, covered smut of barley, and oat smut have been worked out, and valuable information regarding the kernel smut of sorghum and corn has been secured.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects as follows:

Projects.	1918	1919
Supervision.....	\$9,349	\$9,349
Production and improvement of cereals, flax, and broom corn and their products.....	87,756	87,756
Cereal and flax tillage and rotation investigations.....	2,700	2,700
Cereal disease investigations.....	46,700	46,700
Total.....	146,505	146,505

(b) *Corn investigations.*—Provision for corn investigations is contained in a proviso under the item for cereal investigations, carrying an appropriation of \$40,000.

This work includes investigations in the production of improved strains of corn for the different geographical sections of the United States; corn improvement with reference to corn products; Studies of the effect of heredity and environment; best practical methods of seed-corn selection, fumigation, drying, and preservation; and methods of corn culture.

As a result of the work having to do with improved strains of corn, much information has been furnished through correspondence to people throughout the country and some 150 bushels of seed of new and improved varieties of corn have been sent to 500 parties in 47 States. Certain methods of corn breeding have been demonstrated to be practicable commercially.

Considerable data have been obtained upon the culinary and palatability of meal made from different types of corn and from the same type by different processes.

Data also have been secured upon the degree and extent of inheritance of certain characters, the effects of self-fertilization, close breeding, broad breeding, and crossbreeding.

The possibility has been established of developing frost-resistant strains of corn adapted to earlier planting and capable of better yields at lower temperatures than existing varieties.

Valuable methods have been developed and are now in practice in many corn-growing sections with regard to seed-corn selection.

Data have been secured upon factors influencing stalk growth and grain production, and methods of rotation, planting, cultivation, and fertilization have been developed for different environments.

This project carries an allotment of \$40,000 for the current fiscal year and the same amount is estimated for 1919.

16. TOBACCO INVESTIGATIONS.

The tobacco work of the bureau is conducted under the following heads: New England cigar-wrapper tobacco; Maryland export tobacco; Burley tobacco; western fire-cured tobacco; New York binder and filler tobacco; sun-cured, fire-cured, and flue-cured tobacco in the States of Virginia, North Carolina, and South Carolina; Pennsylvania cigar-filler tobacco; Wisconsin cigar-binder tobacco; and miscellaneous tobacco investigations.

In the New England work it has been demonstrated that the use of artificial heat eliminates losses from diseases in the curing barn. Methods of breeding applicable to the improvement of tobacco have been developed. A new type of tobacco developed from the crossing of Connecticut Broadleaf with Sumatra has yielded excellent results. Cuban tobacco under shade made practically normal growth on "tobacco-sick" soils. The use of fertilizers of acid reaction also has proven beneficial to tobacco on these unproductive soils.

In the Maryland export tobacco work the new "Maryland Mammoth" type of tobacco obtained by selection from a native variety has proved much superior to the old Maryland varieties. This variety yields a fine quality of leaf under more intensive methods and on stronger soils than can be used for the old native types. During the past year it has been discovered that there is a serious tobacco disease on many farms in southern Maryland to which all native varieties are susceptible. An attempt is being made to control the disease by crossing the native with foreign resistant types, with a view to introduce the property of resistance into the native varieties.

In the Burley tobacco work it has been discovered that the tendency of Burley tobacco soils to become "tobacco sick" after one or two crops of Burley have been grown is due to tobacco-root rot. Selections of Burley tobacco obtained in Canada showed such high resistance to the disease that a normal yield was obtained on infested soil on which ordinary Burley was a complete failure.

The work with western fire-cured tobacco has shown that a more intensive method and a restricted acreage for tobacco and further diversification of crops are required in those districts. The use of phosphoric acid and nitrogen have increased the yield of such tobaccos. Systematic rotation of crops, including soil-improving crops, increases the yield.

In the New York binder and filler tobacco investigations tests with various kinds and quantities of nitrogenous, phosphatic, and potash fertilizers have been continued and considerable data secured in this connection with regard to the fertilizer requirements for cigar-filler tobacco.

In connection with the sun-cured, fire-cured, and flue-cured tobacco investigations, it has been found in Virginia that the liberal use of fertilizers gives profitable returns, phosphates properly balanced with nitrogen and potash giving best results. Crimson clover also increases the yield in the sun-cured district. In North Carolina the method of picking the leaves as they ripen instead of cutting the stalk increases the net returns from the crop. Closer planting, higher topping, and somewhat heavier fertilizing also give better results. The South Carolina work has resulted in the development of a method for the control of nematodes or root-knot on tobacco by the use of crop rotations in which crops more or less immune to the parasite are used.

Pennsylvania cigar-filler tobacco investigations have been productive of improvements in methods of handling seed beds through steam sterilization. Improper fertilizers, such as those containing chlorine, appear responsible for the poor burning quality of the leaf tobacco.

In the Wisconsin work the investigations so far have been centered on the field control of root-rot by developing types of tobacco highly resistant to the disease. Types of Havana seed have been obtained which show marked resistance. Steam sterilization of the beds is beneficial in such control.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects as follows:

Pr jects.	1918	1919
Supervision.....	\$3,050	\$3,050
New England clear-wrapper tobacco investigations.....	3,000	3,000
Maryland export tobacco investigations.....	1,700	1,700
Burley tobacco investigations.....	1,500	1,500
Western fire-cured tobacco investigations.....	1,800	1,800
New York binder and filler tobacco investigations.....	1,950	1,950
Sun-cured, fire-cured, and flue-cured tobacco investigations.....	9,300	9,300
Pennsylvania cigar filler tobacco investigations.....	3,000	3,000
Wisconsin cigar binder tobacco investigations.....	3,000	3,000
Miscellaneous tobacco investigations.....	3,700	3,700
Total.....	32,000	32,000

17. PAPER-PLANT INVESTIGATIONS.

Miscellaneous work.—A great variety of plant materials have been tested for possible paper-making value and advice has been given concerning processes and propositions.

Cotton stalks.—Changed economic conditions have made it advisable to reinvestigate the paper-making value of cotton stalks, and the cooperation of the University of Texas has been received to attack this problem in an exhaustive manner.

Hemp hurds.—Work by this office was largely responsible for the erection of a modern hemp-breaking mill and its year's production of hemp hurds are contracted for by a large paper company for use in the manufacture of a certain grade of writing paper. Further extension in this line is anticipated.

Flax straw.—Demonstrations by this office on the use of flax straw in the manufacturing of fiber boards for shoe manufacturing have resulted in its commercialization by one company, and its use in the manufacture of cartridge paper has been commercialized by one paper company.

United States currency paper.—Recent tests have shown that domestic flax straw is eminently adapted for the manufacture of paper suitable for the printing of United States currency, sample sheets having been put through the whole printing process, including the printing of the bill. Our currency paper has been made from foreign rags, while over 1,000,000 tons of domestic flax straw, which would more than suffice for the manufacturing of this paper, have been burned, to a large extent. This currency paper is distinctive in character, of the highest quality, of extreme endurance and life, and is very expensive. The fact that our domestic flax straw is suitable for use in the manufacture of such paper speaks very highly for the potential and national value of this immense crop waste. It is proposed, in cooperation with the Treasury Department, to install a tow machine, the principle of which has been allowed a public-service patent, and produce a quantity of high-grade flax tow which shall be used in commercial sized tests on the manufacturing of paper suitable for the printing of United States currency. This work is to constitute the major project of this office.

The amount appropriated for this work during the present fiscal year is \$16,760, and a similar amount is estimated for 1919.

18. ALKALI AND DROUGHT-RESISTANT PLANT INVESTIGATIONS.

Under the above subappropriation are conducted investigations of the alkali resistance of crop plants, the physiology of drought resistance, the indicator value of native vegetation in arid regions, breeding drought-resistant field crops, breeding and culture of pomegranates, the ecology of crop plants, and investigations in Egyptian cotton breeding in the Southwest.

Many of the important field crops grown under irrigation in the western United States have been tested on alkali land and their comparative adaptability to these conditions determined, the information thus secured being made available in publications of the department.

Most of the important crop plants grown in the western United States have been investigated with regard to their relative ability to reduce the moisture

content of the soil and the relative amount of moisture required to produce a pound of dry matter. Important discoveries along these lines have been made and the information made available in department publications.

The possibility of utilizing the native vegetation in classifying new land with respect to its suitability for crop production by dry-farming methods or under irrigation has been demonstrated. Selected strains have been bred of sorgo, millet, alfalfa, and smooth brome grass suitable for dry-land agriculture in the Great Plains region, and some of these strains are becoming established.

Selections have been made of a number of the most promising varieties of pomegranates and these have been propagated and distributed to growers in the Southwestern States.

The effects of various temperatures on a number of crop plants were studied and marked differences in growth and in morphological and physiological characters between closely related forms were found to exist.

Two new types of Egyptian cotton, the Yuma and the Pima, have been developed by selection from one of the varieties grown in Egypt. Both have proved to be valuable in the manufacture of various class of goods for which long and strong fiber is required, especially in the manufacture of automobile-tire parts and the wings of airplanes.

The funds allotted to this work during the present year and the amount estimated for next year are shown by projects, as follows:

Pr. j.cts.	1918	1919
Supervision.....	\$2,250	\$2,250
Breeding and physiology of alkali and drought-resistant plants.....	15,890	15,890
Egyptian cotton breeding and alkali resistance investigations in the arid Southwest.....	6,140	6,140
Total.....	24,280	24,280

19. SUGAR-PLANT INVESTIGATIONS.

These investigations consist of the following: (1) Sugar-beet investigations, including investigations of the status of the sugar-beet industry in the United States, economic practice in crop rotations in sugar-beet areas, and sugar-beet seed production; and (2) sugar-cane and sorghum-sirup production investigations.

Seven field stations have been established, a general survey has been made in many localities where sugar-beet growing is practiced or contemplated, and it appears that under existing conditions of soil, climate, crop competition, live stock, labor, marketing, diseases, etc., a few localities are not at present as profitable for sugar beets as for some other crops. In the majority of the present sugar-beet areas, however, the sugar beet appears under existing conditions to be a valuable factor in the farming operations. The farm-to-farm survey previously begun has been continued in several of the sugar-beet areas from Michigan to California, and more than 2,000 individual farm records have been taken. A special survey of the nematode-infested areas is being made in California, and a suitable area in which this trouble is prevalent has been set aside for the purpose of studying methods of control.

Commercial growers of sugar-beet seed have been assisted in selecting, siloing, and planting the beet roots, and in harvesting, thrashing, and cleaning the seed, with the result that the largest acreage of sugar-beet seed ever produced in the United States has been grown during the past year. The results thus far indicate that some desirable types can be readily produced and fixed. Methods of planting the roots have been worked out with a view to economy in labor and to better results in yield per acre.

In the sirup work favorable results have been obtained by the adoption of proper methods in spacing and rate of planting, selection of planting material with reference to diseases, utilization of tops, feeding bagasse, canning experiments, methods of storing the cane, in variety tests, and in the use of sirup-boiling apparatus of new designs. The sorghum-sirup work has just recently been begun and no results are available at the present time.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects, as follows :

Projects.	1918	1919
Supervision.....	\$5,000	\$3,100
Investigations of the status of the sugar beet industry in the United States.....	13,295	13,295
Economic practice in crop rotation in sugar-beet areas.....	13,220	13,220
Sugar-beet seed production.....	22,000	22,000
Sugar-cane sirup investigations.....	7,500	7,500
Sweet sorghum investigations.....	5,000	5,000
Total.....	56,015	64,115

20. INVESTIGATIONS IN ECONOMIC AND SYSTEMATIC BOTANY.

The projects under this item include bibliographical work in the interest of botanical science; range investigations; economic botany of native plants, including the economic botany of Mexico, with special reference to the utilization of valuable species in the United States, and plants used by the American aborigines; botany of the economic grasses, including a manual of North American grasses, the maintenance of a grass-introduction index and an economic-grass collection, and the miscellaneous identification of grasses; systematic work in economic botany, including an economic monograph of the heather and blueberry families, with special reference to their utilization in the United States; systematic botany of the forage plants cultivated in America, exclusive of the grasses, ornamental trees and shrubs in the American nursery trade; monograph of the Grossulariaceæ, with special reference to the species useful in the United States; records of the origin and character of varieties of ornamental plants originating under cultivation; and miscellaneous identifications.

It has been demonstrated that overgrazed areas can be abundantly revegetated without the necessity of closing them to stock by timing annual grazing to permit of seed formation.

Valuable material on the botany of Mexico, with relation to its use under conditions in the United States, has been secured and numerous publications issued. These matters cover food and forage plants, drugs, tanning and dye plants, narcotics, poison plants, copals, balsams, and gums.

Publications have been issued dealing with North American grasses. Herbarium specimens of grasses from the United States have been arranged geographically, so that those from a given State may be readily consulted. The grass collection has been more than doubled in the last 10 years and is now the largest in the world.

The first sale of hybrid blueberries was made in 1916, bringing an average of 22 cents a quart, this being a yield of about \$200 per acre.

Many identifications of forage plants have been made and assistance rendered to forage-plant breeders and experimenters.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects, as follows :

Projects.	1918	1919
Supervision.....	\$5,596	\$5,596
Range investigations.....	1,800	1,800
Economic botany of native plants.....	3,604	3,604
Botany of the economic grasses.....	6,000	6,000
Systematic work in economic botany.....	6,100	6,100
Total.....	23,100	23,100

21. DRY-LAND AGRICULTURE INVESTIGATIONS.

Independent field stations are maintained at the following points, in the Great Plains area: Akron, Colo.; Ardmore, S. Dak.; Big Spring and Dalhart, Tex.; Lawton and Woodward, Okla.; Mandan, N. Dak.; Tucumcari, N. Mex.; and Sheridan, Wyo. Investigations in cooperation with other offices of the Bureau of Plant Industry are conducted at Amarillo, Tex.; Archer, Wyo.;

Belle Fourche, S. Dak.; Huntley, Mont., and Scottsbluff, Nebr. Investigations in cooperation with State experiment stations are conducted at Colby, Kans.; Dickinson, Edgeley, Hettinger, and Williston, N. Dak.; Garden City and Hays, Kans.; Havre and Judith Basin, Mont.; and North Platte, Nebr. The work at these stations has for its object the determination of the best methods of cultivation and crop rotations for the conservation of moisture and the maintenance of humus in the soil of the Great Plains area.

The results obtained from the experimental work in the Great Plains area since its inception have been very instructive. Some of these results have been entirely negative; nevertheless, these are of great value, for it is as important to be able to advise the farmers in the Plains region what they can not hope to grow with profit as it is to advise them what they can grow. It has been shown that some crops can not be profitably produced in some sections by any method of culture. Some soils do not respond to differences in tillage methods. No method of cultivation has proven its ability to overcome the extremely unfavorable climatic conditions that occasionally occur in the Plains. Small grains are best adapted to the northern and sorghum crops to the southern portion of the Plains. These results are now published in seven bulletins of the Bureau of Plant Industry, and several other bulletins are in course of preparation.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects as follows:

Projects.	1918	1919
Supervision.....	\$20,000	\$20,000
Methods of crop production under semiarid or dry-land conditions.....	110,000	110,000
Northern Great Plains field station (Mandan).....	30,000	30,000
Total.....	160,000	160,000

22. WESTERN IRRIGATION AGRICULTURE.

The object of this work is to investigate agricultural conditions in the arid and semiarid regions of the West, to study and devise methods of crop production in these regions, and to provide the various cooperating specialists of the Bureau of Plant Industry with facilities for carrying on their special lines of investigation in the field.

Seven field stations are maintained, each under the immediate supervision of a farm superintendent, who, with his assistants, attends to all the general and technical work, such as taking notes on the behavior of crops under different treatments, recording data, supervising cultural and harvesting operations, etc. The superintendent also provides facilities, such as land, teams, common labor, and office and laboratory supplies for the use of cooperating offices of the bureau.

Yuma experiment farm.—During the past year numerous experiments were conducted with various crops adapted to this region, and especially good results were secured with alfalfa as a pasture crop for hogs, with a new method of planting cotton in bedded rows, and in the use of Sudan grass and alfalfa as pasture for steers.

Truckee-Carson experiment farm.—Particular attention was given to cooperative experiments on farms in the testing of varieties of field and truck crops. On the experiment farm special attention was given to the use of alfalfa as a pasture crop for hogs and to experiments on the effects of alkali salts on the growth of crops.

San Antonio experiment farm.—Climatic conditions were adverse and root rot of cotton and a severe infestation of boll weevil caused serious damage. Extensive experiments were carried through, including pasturing of hogs and steers. Rotation experiments were continued, showing that rotation of crops is an important means of checking injury from root rot. Cooperative work with cotton was continued in working out the best methods of producing this crop and determining which varieties should be used for general planting.

Scottsbluff experiment farm.—Climatic conditions were adverse, two very disastrous hail storms reducing the crop yields. A number of experiments in methods of tillage for the production of irrigated crops were brought to conclusion. Additional pasture-grass mixtures were started and experiments in

the utilization of alfalfa for hogs continued on a large scale. A very remarkable demonstration as to the effect of controlling potato scab by planting on land recently in alfalfa, as compared with land recently intertilled, was observed.

Umetila experiment farm.—Special attention was given to irrigating, and experiments in determining the quantity and quality of percolating water through the porous soils were continued.

Huntley experiment farm.—Experiments were conducted in the utilization of irrigated pastures and the production of clover for seed and alfalfa for hog pasture, in addition to a number of other experiments, all with excellent results.

Belle Fourche experiment farm.—The third year's results from fall irrigation experiments were secured and published. Experiments in crop rotation and mixed-grass pastures, in the use of grass for dairy stock, and the use of alfalfa for sheep and hog pastures were conducted, in addition to extensive cooperation with other offices of the bureau.

Introduction of commercial cotton culture in the Southwest.—This office had only a minor part in this work during the year. The work has now reached a successful commercial stage.

This work carries an appropriation of \$75,380 for the current fiscal year, and \$73,580 is estimated for next year.

23. POMOLOGICAL INVESTIGATIONS.

Fruit production.—Fruit-production investigations have been continued as in the past, with special emphasis on raspberries, strawberries, and cherries, publications upon which have been prepared during the year. Studies are under way relating to apricots, prunes, and subtropical fruits, especially avocados, grapefruits, and oranges.

Fruit storage.—Special emphasis has been placed upon the picking, handling, and storing of the apple crop through the cooperative project jointly carried on by this office and the Bureau of Markets. This has been followed up by a system of warehouse and car inspection to determine the condition in which the crop reaches points of consumption. Supplementing this work, new lines of investigation extended the storage studies so as to more adequately and fully determine the reactions and behavior of fruits at different stages of maturity and from different sections under cold-storage handling.

Nut investigations.—Through an extension of the work due to a small increased appropriation for nut investigations special studies have been undertaken looking to the solution of some of the cultural problems connected with pecan production, and a survey of the pecan industry is under way. It is believed that decided advantages to the industry will result from these investigations and surveys.

Fruit utilization.—Due to the unusual seasonal conditions which obtained during the harvest season of 1917, special investigations in connection with the utilization of apples and other fruits were rendered necessary. A special study was therefore made of the apple-drying industries of the country and experiments conducted to determine the feasibility of utilizing crops which had been subjected to low temperatures at harvest time. These investigations were of special importance because of the shortage of equipment in the apple-growing regions during the season of 1917.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects, as follows:

Projects.	1918	1919
Supervision.....	\$1,280	\$2,340
Fruit handling and storage investigations.....	22,000	(1)
Storage life of fruits.....	13,500	15,500
Viticultural investigations.....	15,925	15,925
Fruit production investigations.....	14,362	14,362
Nut culture investigations.....	9,240	9,240
Fruit improvement.....	11,963	11,963
Systematic pomology.....	11,783	11,783
Fruit utilization.....	3,250	3,250
Extension work in pomology.....	917	917
Total.....	107,200	85,280

¹ Transferred to the Bureau of Markets.

24. EXPERIMENTAL GARDENS AND GROUNDS.

The purpose of this item is to maintain a range of 30 greenhouses on the department grounds in Washington, D. C., for the following purposes: The inspection and fumigation of plants, the propagation of blueberries and ever-green shrubs, general hybridization work, seed testing, experimental work with citrus and other tropical fruits, propagation of plants for ornamenting the grounds of the department and those of the Weather Bureau, miscellaneous experimental work, and for special congressional distribution, experiments with alfalfa and clover, experiments with florists' crops and in connection with plant-breeding work, pathological experimental work of the bureau, experimental work of the Bureau of Entomology, plant quarantine, and the maintenance of the department grounds in good condition.

This project carries an appropriation of \$11,690 for the current fiscal year and a similar amount is estimated for 1919.

25. HORTICULTURAL INVESTIGATIONS.

Special stress has been placed upon the production of home vegetable gardens, production of sweet potatoes and staple canning crops to contribute to the extraordinary needs of the country during the present crisis.

Peanut investigations—The peanut work has been decidedly enlarged and greatly extended, and special stress was placed upon the harvesting and curing of the crop and upon the manufacture of edible oil from the peanut.

Potato investigations.—The Irish-potato work has received special consideration from the point of maintaining production under very adverse conditions, particularly as regards seed supply available for the crop of 1917. Before and at the time of harvesting the crop of 1917 special emphasis was placed upon the importance of husbanding the crop through provision of proper storage facilities in order to prevent loss through lack of transportation facilities or through inadequate protection. At this time also special efforts were made to determine fields true to variety and free from disease, the production from which would be suitable for seed purposes. Much was accomplished in this line and the largest crop of potatoes ever produced has been harvested and stored. Through a special appropriation, work along this line, in cooperation with the Office of Truck Crop Diseases, was conducted in Maine, New Hampshire, Vermont, Massachusetts, New York, Michigan, Wisconsin, Indiana, Minnesota, Colorado, and Oregon.

Vegetable utilization.—Special consideration has been given to the questions of vegetable utilization, particularly the trying of the more important vegetables, such as carrots, cabbage, turnips, potatoes, corn, and sweet potatoes, which can either be used in combination for a vegetable stew or for the manufacture of products to be used as substitutes for bread grains in the manufacture of bakery products. Very satisfactory results have been obtained and it is believed that these products can play a very useful and important roll in the rationing of civil as well as military forces.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects as follows:

Projects.	1918	1919
Supervision.....	\$4,600	\$2,400
Vegetable handling and storage investigations.....	3,500	3,500
Storage life of vegetables.....		3,500
Truck-crop production investigations.....	13,680	15,680
Truck-crop improvement.....	3,980	3,980
Irish-potato investigations.....	22,027	23,027
Systematic clericulture.....	250	250
Vegetable utilization investigations.....	2,000	2,000
Landscape gardening and floriculture investigations.....	12,703	9,703
Total.....	62,740	60,540

26. ARLINGTON EXPERIMENTAL FARM.

Nearly the entire field area has been devoted to experimental purposes. On land not so occupied, on account of the general scarcity of grains, more attention than usual has been given to the production of those grains suitable for

feed purposes, and wherever possible, without interfering with experimental work, a grain crop has been produced. By so doing it will be possible to avoid purchasing the bulk of the grain necessary for horse feed.

Work on the drainage project on the reclaimed marsh area, which has been conducted in cooperation with the Office of Drainage Investigations, has made satisfactory progress. Sufficient tile has been purchased to complete the project. A tidal gate and about half the necessary tile has now been installed. It is hoped that the work may be continued during the early spring months and be completed before planting time next spring.

During the year one additional greenhouse has been erected and considerable progress made on the installation of laboratory and similar equipment.

On account of the gradual development of the farm for laboratory and similar purposes, the present water system has become inadequate. An attempt has been made to supplement it by drilling an additional well. While this has temporarily relieved the situation, the flow is not sufficient to meet the increased demand. The water is also unsatisfactory for many purposes on account of its high iron content. It is believed that the most satisfactory solution of this problem will consist in the installation of a water main connecting with the present Fort Myer and Arlington Cemetery main supplied by the Washington water system.

The work at the farm has been brought more closely in touch with the department offices in Washington through the installation of a telephone system having direct departmental connection and through the inauguration of a department automobile bus service operating on a regular schedule. Through the operation of these two systems it is hoped to economize a great deal of time.

This work carries an appropriation of \$21,900 for the current fiscal year and a similar amount is estimated for this purpose during 1919.

27. FOREIGN SEED AND PLANT INTRODUCTION.

This office is the largest and best equipped organization in the world for the exchange of experimental food and economic plants. Through its activities any new plant which may be of exceptional value to our agriculture can be secured for American experimenters. The war has proven in a striking way the value of such a service, for the department now has the information and, in hundreds of cases, the living plants which will make us independent of foreign sources for all kinds of plant products.

During the year especial attention has been paid to the perfecting of that portion of the work which has to do with the proper sanitation of the newly introduced plants. No organization in the world compares in equipment for this work with that now built up in this office, and the danger of there slipping into the country through the introduction of a new plant some dangerous parasite of our great plant industries has been eliminated. The system of detention greenhouses, special propagating gardens under rigid inspection, and a system of keeping track of all plants introduced make the introduction of a new disease a matter no longer to be feared.

An agricultural explorer has been spending the whole year in the mountains of Guatemala studying the varieties of avocado which occur there. He finds this plant, otherwise known as the alligator pear, an essential food plant of the Guatemalans, furnishing, together with their tortillas of Indian corn, their main food. The varieties which are grown there are hardier and evidently far superior in shipping qualities and in proportion of meat to seed than any now grown in this country. They contain as high as 29 per cent of a valuable vegetable oil, and since the fruits weigh a pound apiece and the trees produce 150 to 300 fruits, this fruit tree has been shown to be a rival of the olive in the production of human food. A conservative estimate would put the production of oil alone at 1,800 pounds per acre, whereas the maximum oil yield of the olive in California is only 2,000 pounds. The avocado requires no processing to make it ready for the table. In these times, when there is such a shortage of vegetable oils, this tree crop is worthy of especial consideration.

Two explorers have been investigating along the Yangtse River and in the region around Peking the native Chinese pears which grow wild there and also those which are cultivated. Types have been found which have proven to be especially resistant to the destructive pear blight which has caused so much damage to the pear industry of this country. These explorers have secured several hundred pounds of the seed of these resistant pears, and extensive trials will be made by American orcharists of these hardy seedlings as stocks and

for the purpose of making blight-resistant trunks for the orchard trees, especially of the north Pacific coast region. Some of the cultivated varieties are large enough to be promising for breeding purposes.

Among the many introductions (more than a thousand) of soy beans from the Orient have been singled out several which are remarkable producers and certain others because of their value when eaten green like lima beans. The researches of the bureau's explorer, Mr. Frank N. Meyer, have confirmed the reports of the indispensable rôle played by this bean in northern China. It may be said to furnish to the Chinese, and the Japanese as well, what western nations get in their milk and beef. The soy bean constitutes their greatest source of fat and protein, and in the form of soy sauce furnishes them with their principal flavoring substance. Soy sauce might be called the oriental gravy. It is the greatest food plant of the Orient and one of the greatest in the world. The cutting off of the soy-bean imports into Germany constituted one of the most severe blows at her supply of fat. Austria attempted its introduction 25 years ago, but the conservatism of her peasants prevented it from becoming a crop there. In America the crop doubled last year.

Through the stimulus of the activities of this office, the dasheen, which in 1916 amounted to only about 12,000 bushels, increased this past year to 30,000 bushels, and as a vegetable for those regions in the South where late potatoes can not be grown profitably it is steadily winning its way. In those localities where it can be grown, people are learning to use it instead of the potatoes shipped in from the North, and the taste for it is spreading in the northern cities. Its large yields, 250 to 350 bushels per acre, which are easily obtained on good land, are creating a supply for export to the large cities. Advertising has had to be done to assist in making a market for this excellent vegetable, which is suited to cultivation on hundreds of thousands of acres of land from southern Mississippi eastward to the Atlantic coast.

The Chinese grafted jujube proves to be a remarkable fruit tree for the hottest regions of the country. In Texas and California it has been entirely successful, never failing to produce a crop of fruit. It blooms so late in the spring that it is never caught by late spring frosts. Commercial acre plantings in these States are arranged for, and the processing experiments which have been made have been so successful that the product compares very favorably with the best of the Persian dates. Twenty of the largest grafted sorts from China have now been fruited out.

The experiments with Holland bulb growing in the Puget Sound region have been so successful that the congressional distribution of bulbs was supplied from the experimental plots, and a prominent American in northern California has been induced by these experiments to start a bulb farm on a large scale in Humboldt County. He planted 10,000,000 bulbs last spring.

The dry-land elm from northern China has proven so successful in the Dakotas as a windbreak tree that the demand for it can not be supplied.

The Fei peach, to secure which required several trips into the Shantung Province of China, has been fruited out and proves to be a valuable acquisition to American horticulture, especially for canning purposes. It ripens in September. The Chinese wild-peach stock continues to be in demand as a stock for alkali soils.

The Chinese cabbage, which is now grown on a considerable scale, is really more comparable to the lettuce as a salad plant than to the cabbage and, because it requires about half the labor to produce it, is undoubtedly capable of very wide extension as a salad plant. Its substitution at this time for lettuce is worthy of serious consideration. Its better keeping qualities and greater yield and the fact that it appears to be universally liked as a salad make it a promising substitute.

The many other projects of the office have been kept going and have shown quite as much promise as those mentioned.

Since the outbreak of the war considerable attention has been given to a stimulation of the different processes of vegetable drying as a means of preventing the waste of these important but perishable food products. At least twenty commercial firms appear to be prepared to manufacture dried vegetables as soon as it is apparent to them that there is a demand. In connection with the testing of our other new foods, tests of these dried or dehydrated vegetables have been made and the fact established that certain of them can without doubt be substituted for the more wasteful or expensively

prepared canned products and that the consumption of these dried foods is largely a matter of education and advertisement.

The funds allotted to this work during the present fiscal year and the amount estimated for next year are shown by projects as follows:

Projects.	1918	1919
General direction of plant introductions.....	\$38,000	\$34,400
Foreign explorations.....	15,200	15,200
Plant introduction field investigations.....	41,840	41,840
Total.....	93,040	91,440

28. FORAGE-CROP INVESTIGATIONS, WEED ERADICATION, AND PURCHASE AND DISTRIBUTION OF NEW AND RARE SEEDS.

This subappropriation covers investigations of forage crops (such as alfalfa, clover, sorghums, field peas, sudan grass, timothy, Rhodes grass, cowpeas, soy beans, velvet beans, and vetches), weed investigations, and the purchase and distribution of new and rare seeds.

Below are given data regarding results obtained with the various investigations named:

(a) *Forage-crop investigations.*—Alfalfa: Completed investigations prove that overcutting of alfalfa is an extremely important factor in causing high winter killing. Publications: United States Department of Agriculture Bulletin 428, *Medicago falcata*, a Yellow-Flowered Alfalfa. Ready for publication: Identification of Alfalfa Varieties by the Seedlings.

Clover: Plants grown from Italian red clover are exceedingly susceptible to anthracnose and the use of this strain is therefore inadvisable. Ladino white clover has given good promise in Michigan, Tennessee, and Mississippi; a source of seed supply has been developed in Idaho. Improved devices for harvesting sweet-clover seed have been developed and have already been adopted by seed growers. An annual variety of sweet clover, probably of agronomic importance, has been described. Publications: Farmers' Bulletin 820, Sweet Clover Utilization; Farmers' Bulletin 836, Sweet Clover Harvesting.

Sorghums: The extreme drought of 1917 again confirms the value of both feterita and Freed sorghum for unusually dry seasons, thus substantiating previous advice that a portion, at least, of the crop should be planted to these varieties. Critical studies on the effect of temperature and other climatic factors on the growth of sorghums have been completed and a manuscript submitted for publication.

Miscellaneous dry-land forage crops: The Early Buff cowpea is found superior to the Blackeye cowpea for human food in the southern portion of the Great Plains. The unfavorable season has made it impossible to grow the large quantities of Indian millet seed, which it was hoped to distribute during the coming season. Publication: Farmers' Bulletin 793, Foxtail Millet.

Field peas: Three varieties introduced by the department, namely, Bangalia, Carleton, and Kaiser, are all highly valuable, and large quantities of seed have been grown for general distribution. Publication revised: Farmers' Bulletin 690, The Field Pea as a Forage Crop.

Sudan grass: This crop continues to maintain its popularity both on dry and irrigated lands. On irrigated land, especially, its culture is rapidly increasing. A bulletin on sudan grass and related species is ready for publication.

Timothy: Seeds of two improved varieties were distributed, especially in the State of Ohio.

Pastures: Investigations continue along the same lines as in 1916. A Farmers' Bulletin on pastures and meadows in the Northern States is ready for publication.

Rhodes grass: The use of this grass is increasing in Florida and it has become extremely popular and widely planted in south Texas. A Farmers' Bulletin is being prepared for publication.

Cowpeas: Numerous varieties of hybrids developed by the department have been studied under field conditions in comparison with standard sorts. Two of the best hybrids, Potomac and Arlington, have proved highly superior, and large quantities of seed have been grown for general distribution.

Soy beans: Numerous varieties of hybrids have been tested for forage, for oil content, and for food value. Several of the best varieties introduced by the department have become commercialized. Publications: Farmers' Bulletin 886, Harvesting Soy-Bean Seed; Year Book for 1918, The Soy-Bean Industry in the United States.

Velvet beans: The culture of this crop has been greatly extended and increased by the development of early varieties. Several new hybrids are especially promising. A Farmers' Bulletin has been prepared to replace a circular issued early in the year.

Vetches: The best rate of seeding in the Pacific Northwest as the result of extensive experiments has been found to be 80 pounds of seed when grown alone, and 60 pounds when mixed with the small grains. Better yields are obtained by growing vetch in rotation with a cultivated crop. Narrow-leaved vetch is an exceedingly important plant for the South and its culture has been greatly stimulated by increased seed supplies. Hungarian vetch is found very valuable for poorly-drained lands in western Oregon. Bulletins for publication have been prepared on purple vetch, so highly popular on the Pacific coast, and on horse beans.

(b) *Weed eradication.*—The principal investigations during the year have been to determine the best methods of destroying species of *Ribes* in forest lands, as this genus is an alternate host of the white-pine blister rust; and methods of controlling or eradicating nut grass, perhaps the most important southern weed. Publication issued: Farmers' Bulletin 833, Methods of Controlling or Eradicating the Wild Oats in the Hard Spring Wheat Area. A manuscript has been presented for publication on farm practice in the cultivation of potatoes. The investigations on chemical weed destroyers have been completed and the results are being prepared for publication.

The funds allotted to the work under (a) and (b) during the present fiscal year, and the amounts estimated for next year, are shown by projects as follows:

Projects.	1918	1919
Supervision.....	\$13,000	\$13,000
Forage crop investigations.....	59,680	60,000
Cactus investigations.....	3,000	(1)
Weed investigations.....	7,500	7,500
Total.....	83,180	83,180

¹ In abeyance for lack of funds.

(c) *Purchase and distribution of new and rare seeds.*—This item covers the distribution of new and rare field-crop seeds throughout the entire United States, having for its object the dissemination of seed of new and rare field crops, seed of improved strains of staple crops, and high-grade seed of crops new to sections where the data of the department indicate such crops to be of considerable importance.

During 1917 seeds of new crops and of improved strains of standard crops were distributed as follows: Grimm, Baltic, Peruvian, Kansas-grown, and Dakota-grown alfalfas; yellow and white sweet clover; Brabham, Groit, and Early Buff varieties of cowpeas; feterita; Kaiser, Bangalla, Carleton, French June, Golden Vine, and Chang varieties of field peas; Natal grass and Rhodes grass; dwarf hegari; dwarf blackhull kafir; Kursk millet; white milo; Red Amber, Orange, Honey, and Freed sorghums; Black Eyebrow, Haberlandt, Mammoth Yellow, Manchu, Tokio, Early Green, Ebony, Hollybrook, Ito San, Peking, Virginia, Wilson, and Wilson-5 varieties of soy beans; Sudan brass; Georgia and Yokohama varieties of velvet beans; and Acala, Columbia, Dixie, Durango, Holdon, Lone Star, and Trice varieties of cotton.

During the year 244,463 packages of new and rare field seeds were distributed, including 90,067 packages of cotton seed. The results obtained were gratifying and indicated the value of a distribution of this kind. Such a distribution enables a farmer to secure seed of new and improved crops in sufficient quantities to produce stocks for future seeding, the general effect of which is gradually to improve the crops of the country.

This project carries an allotment of \$60,000 for the current fiscal year and a similar amount is estimated for next year.

29. ADMINISTRATIVE AND MISCELLANEOUS EXPENSES.

The funds available under this subappropriation are used for the effective administration of the affairs of the Bureau of Plant Industry and general direction of all of its investigational activities. The amount appropriated for the current fiscal year is \$31,020, which is the same as the estimate for 1919.

30. CONGRESSIONAL SEED DISTRIBUTION.

This appropriation covers the distribution of vegetable, flower, and lawn-grass seeds, bulbs, and plants, which are proportionately allotted subject to orders from Senators and Representatives in Congress.

During the fiscal year 1917 there were distributed on congressional and miscellaneous requests 12,170,448 packages of vegetable seed and 3,812,467 packages of flower seed, or a total of 15,982,915 packages, each containing five packets of different kinds of seed. There were also distributed 12,735 packages of lawn-grass seed, 650 packets of tobacco seed, and 11,159 boxes of imported narcissus and tulip bulbs. The seeds and bulbs were purchased on competitive bids, as heretofore. Each lot of seed was thoroughly tested for purity and viability before acceptance for distribution by the department, and tests of each lot of seed were conducted on the department's trial grounds to determine truthfulness to type. Approximately 35 per cent of the seed was secured from "surplus" stocks, the remainder being grown for the department under contract.

The contract of last year for packeting, assembling, and mailing vegetable and flower seed was continued in effect, the price being 94½ cents per 1,000 packets, which included hauling to the city post office or to the mail cars on track.

The appropriation for this work during the current fiscal year is \$243,720 and the estimate for next year \$242,320.

31. DEMONSTRATIONS ON RECLAMATION PROJECTS.

The object of this work is to encourage and aid settlers on Government reclamation projects in the development of local agricultural industries by supplying information, making suggestions, and conducting demonstrations relating to agricultural industries and by assisting in the formation and conduct of farmers' cooperative organizations, for the purpose of improving the methods of production and disposal.

Field representatives, under the supervision of the Washington office, stationed on a number of the reclamation projects operate in direct cooperation with the settlers in furtherance of the objects outlined above. Close cooperation is had with the Office of Western Irrigation Agriculture of the Bureau of Plant Industry in all the work, and on those projects where that office maintains field stations and where this office has field men stationed the two agencies cooperate closely in placing before the farmers the results of the field investigations. Following are the projects where this work is carried on:

North Platte.—Attention given chiefly to the swine industry, the principal features including improvements in methods of feeding, the development of cooperative marketing, and the control of hog cholera.

Truckee-Carson.—The work is devoted chiefly to dairying, swine production, and to the production of poultry, with special reference to turkeys.

Minidoka.—The work here is principally with swine production, dairying, beef production, and sheep production. Attention is also given to the control of hog cholera.

Tieton.—The work here has to do principally with dairying, swine and beef production, and cow testing.

Shoshone.—Attention is directed chiefly to dairying, swine and beef production, and cow testing.

Huntley.—During the year a greatly increased interest in dairying was developed and preliminary work was done looking toward the establishment of farm-sheep production on the project.

Uncompahgre.—The work is devoted chiefly to dairying and swine production, with some attention paid to the beef industry.

Boise.—The work here has to do chiefly with the swine industry, dairying, and beef production. The methods of hog-cholera control inaugurated during previous years were successfully continued, and very little loss from cholera occurred.

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

2. Once the problem is identified, the next step is to define the objectives and goals of the project. This helps to clarify what needs to be achieved and provides a clear direction for the team.

3. The third step is to develop a plan or strategy to address the problem. This involves breaking down the problem into smaller, manageable tasks and determining the resources needed to complete each task.

4. The fourth step is to implement the plan. This involves putting the strategy into action and monitoring progress to ensure that the project is on track.

5. The final step is to evaluate the results of the project. This involves assessing the outcomes against the objectives and goals and identifying any areas for improvement.

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part 1C

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING

TUESDAY, JANUARY 8, 1918



WASHINGTON
GOVERNMENT PRINTING OFFICE
1918

AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Tuesday, January 8, 1918.

OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING.

The CHAIRMAN. Turn to page 166, gentlemen, the estimates of the Bureau of Public Roads. Dr. Page will present his estimates.

STATEMENT OF MR. L. W. PAGE, DIRECTOR OF THE OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Your first change is in the title of your bureau from Office of Public Roads and Rural Engineering to Bureau of Public Roads.

Mr. PAGE. I think, Mr. Chairman, that suggestion first came from you. You asked me last year why my work did not have a shorter name; you thought it was too long.

The CHAIRMAN. Well, I think it is. I think it is the most cumbersome name in the entire department.

Mr. HARRISON. In this instance, the Secretary suggested that the name be changed.

The CHAIRMAN. That change goes throughout your estimates, I presume?

Mr. PAGE. Yes, sir.

The CHAIRMAN. In your statutory roll, are there any new places for which you have made recommendations?

Mr. PAGE. I do not think there are.

The CHAIRMAN. There seems to be none except by way of transfers from the lump fund.

Mr. PAGE. Over to the statutory roll.

The CHAIRMAN. And you have reduced the lump sum by the amount you have transferred?

Mr. PAGE. Yes; except so far as the transfers from the administrative fund are concerned. That comes up later on in the bill, though, and is explained.

The CHAIRMAN. Let us see about that, Mr. Page.

Mr. PAGE. I think that is on page 173, the general administrative expense connected with the above-mentioned lines of investigations and experiments, item 54. It is still \$16,000; we did not reduce the amount, although employees with salaries aggregating \$9,580 were transferred to the statutory roll. Considering the size of the appropriations of the bureau and the additional fact that we have

to administer a great deal of work of an investigative and educational character due to the Federal-aid road act, the fund we have for administrative work is barely sufficient for our needs and should not be reduced.

Mr. McLAUGHLIN. You have to administer what fund?

Mr. PAGE. The Federal-aid fund of \$85,000,000, including the \$10,000,000 forest fund. The matter of getting the States organized requires in our arrangement of the work, a great deal of effort; it is necessary to get the proper methods and systems introduced in the different States. I think there were six States which had no highway departments at all when the Federal-aid bill was passed. Eleven other States had highway departments which were not operative under the act, and we have had to help organize the work in those States.

The CHAIRMAN. These transfers represent really increases in appropriations?

Mr. PAGE. It represents an increase of \$8,660.

The CHAIRMAN. Very good. Take up your general expense item on page 168. The first item there is No. 47, for inquiries in regard to systems of road management throughout the United States and for giving expert advice on this subject. Tell us very briefly what you do under that appropriation.

Mr. PAGE. That work is just along the line that I have been speaking of. We have been making a study for a number of years of the different systems of road management and are now introducing those in the States in connection with the Federal-aid road act. There is nothing different in that item to what was contained last year, and there is no increase asked in it.

Mr. ANDERSON. Have you discovered anything new in the way of road management in the last year?

Mr. PAGE. Yes, I think we have. The Federal-aid road act is based upon the establishment by States of efficient systems of management, and these we have ascertained by a study of the successes and failures in the respective States.

Mr. ANDERSON. I mean particularly road construction and maintenance.

Mr. PAGE. That comes under a different item.

Mr. ANDERSON. You have not made it clear to me, then, what sort of work you do under item 47. It may be clear to the rest of the committee members; if so, I will not consume the time of the committee in asking you.

Mr. PAGE. Systems of road management are those relating to the executive and administrative work as contrasted with the engineering work. It comprises accounting, regulation, organization, procedure—in short, the business handling of the work.

Mr. ANDERSON. You mean the use of the funds?

Mr. PAGE. The administration of the funds, the manner of keeping accounts, and the distribution of funds, and everything other than actual construction.

Mr. LEE. It includes the engineering, of course?

Mr. PAGE. Oh, no; except those phases of engineering which are economic in character. The strictly engineering work comes under the construction and maintenance item.

The CHAIRMAN. Are there any questions, gentlemen, on number 47 or any other information you would like to give us?

Mr. McLAUGHLIN. You have spoken of the increased expense owing to this Federal-aid fund and the work it is necessary for you to do under it in cooperating with the States, in assisting the organization of the State highway departments, and so on. When you come to the item under which that extra work is done and paid for, I wish you would point it out.

Mr. PAGE. The bulk of it is done under the item we have just passed.

Mr. McLAUGHLIN. Forty-seven?

Mr. PAGE. Yes.

Mr. ANDERSON. I was under the impression that the road act itself set aside a proportion of the fund for administration.

Mr. PAGE. It does; 3 per cent.

Mr. ANDERSON. Is the same sort of work done under this item as is done under that 3 per cent appropriation?

Mr. PAGE. No, sir. This has nothing to do with the administration of the Federal-aid road act at all. So far as educational work is concerned, we have no money under that act for dealing with individuals or an entire community, State or county. We can only administer the exact expenditure of the money.

Mr. ANDERSON. I gathered the impression from something you said before that the item we have just been considering had some relation to the administration of the Federal-aid road act. In other words, I understood you to say, and I think Mr. McLaughlin understood the same thing, that the administration of the Federal-aid road act involved additional expenditures under these other items.

Mr. PAGE. No; I did not make myself clear if I conveyed that impression. The Federal-aid road act requires the apportionment of funds to the various States on certain definite bases, and 3 per cent of the total appropriation is allowed under the act for administrative expenses. The Government pays for and inspects the work. We have used the funds under item 47 for studying the systems of road management and giving expert advice on this subject in helping the States to organize. Of course, we have always helped the counties and the States to a certain extent too.

Mr. McLAUGHLIN. You help them to organize for the purpose of complying with the Federal-aid road act?

Mr. PAGE. Yes, sir; extending systems of road management. Do I make that clear?

Mr. ANDERSON. I think so. Do you have any particular reference, for instance, to the difference between a county system and a township system and between what is called up in my State the cash system of paying of taxes or the payment of taxes in labor? Does it involve those propositions?

Mr. PAGE. Oh, yes; it involves methods of taxing, and we make studies of that.

The CHAIRMAN. Anything further on item 47? If not, Doctor, take up your next item.

Mr. HAUGEN. When can we have a report on what you have done with the Federal money?

Mr. PAGE. That comes under the Roads Committee of the House. The money was provided for a five-year period.

Mr. HAUGEN. I mean as to the administration of it, the allotting of the money to the States, and so on.

Mr. PAGE. I make a report every year to the Secretary of Agriculture on that; but I do not think the Roads Committee of the House or the Agricultural Committee of the Senate will take that up in hearings for five years—until the five-year period has elapsed.

Mr. HAUGEN. Do the States in general take to this proposition?

Mr. PAGE. Oh, yes; every State in the Union has passed a law accepting the provisions of the Federal-aid road act.

Mr. HAUGEN. And the money has been appropriated by the States?

Mr. PAGE. The money is allotted every year, and they are taking that up.

Mr. HAUGEN. All of the States?

Mr. PAGE. All of them have not yet, but they are getting ready. Some of them did not pass laws until, I think, as late as last August.

Mr. HAUGEN. Each project must be approved by the Secretary?

Mr. PAGE. By the Secretary and the State highway department.

Mr. RUBEY. And those States which fail to take the requisite steps are not going to benefit by the law?

Mr. PAGE. None of them have failed yet. They will have, even on the first year's allotment, to this coming July to avail themselves of it. If any State fails to avail itself of its proportion, the law provides that such amount shall be reapportioned among all the States.

Mr. HAUGEN. First an application is made to the State?

Mr. PAGE. Yes.

Mr. HAUGEN. And when approved by the State it is submitted to the Secretary of Agriculture?

Mr. PAGE. Yes.

Mr. HAUGEN. It has to be approved by the Secretary of Agriculture?

Mr. PAGE. Yes.

Mr. HAUGEN. So it is really up to the States to apportion the money?

Mr. PAGE. Exactly.

The CHAIRMAN. Anything further?

Mr. HAUGEN. No; I think that is all.

The CHAIRMAN. Take up item 48, for investigations of the best methods of road making, especially ordinary sand-clay and dirt roads, etc., \$141,060. There is no change in the item except by way of a transfer. Briefly, what do you do under the item?

Mr. PAGE. The work is the same as it has been in former years. We give direct advice to the counties or States who ask for it, and we even give advice to individuals. Under this item we also build object-lesson roads, the local government appropriating the necessary funds and our office furnishing the services of an engineer long enough to get the work started and to break in a local man. We rarely build roads over a mile in length, and I think there can be no doubt that this work has been productive of much benefit to many communities throughout the country in handling their road-construction problems.

The CHAIRMAN. Any other questions on that item, gentlemen?

Mr. HAUGEN. How many of these projects are approved by the Secretary and how many are rejected?

Mr. PAGE. I did not come prepared on the Federal-aid work.

Mr. HAUGEN. Approximately?

Mr. PAGE. Approximately 240, I should say, have been approved, and I think about six or eight rejected.

Mr. ANDERSON. How large a mileage does that represent?

Mr. PAGE. I should say something like 1,700 or 1,800 miles.

The CHAIRMAN. All of that information, gentlemen, I will say, is set out on page 240 of the Secretary's report. It is 1,730 miles, Doctor.

Mr. McLAUGHLIN. Under item 48 there are several things stated for which the money is appropriated or to be spent. One thing is for investigations of the best methods of road building, especially ordinary sand-clay and dirt roads. Now, will your investigations of these matters ever close? Don't you discover a lot of things and have that knowledge for all time and concerning which you practically can not learn anything more?

Mr. PAGE. Yes. Many experiments have been made and have been discontinued. We have either gotten positive or negative evidence on them.

Mr. McLAUGHLIN. That does not include the best kinds of road-making materials? That is another matter?

Mr. PAGE. That is another matter altogether.

Mr. McLAUGHLIN. But you can arrive at the best methods of road building, and after you had gotten your information you would not need anything further along that line.

Mr. PAGE. We publish our results and drop the project, but there are new methods coming out all the time. For instance, we are trying some experiments right now with mixtures of cast iron and rock aggregate, and I think as soon as the war is over that material is going to make one of the most durable types of roads that have ever been built and be probably not more expensive than the most expensive pikes used to-day. We can put forty-odd per cent of stone in the mold and pour the iron on it in a molten state.

Mr. HAUGEN. It is pretty expensive, is it not?

Mr. PAGE. It is no more expensive than some of the types in existence to-day; but if it will last 50 or 100 years, it will save money. The great trouble to-day is to meet the great amount of traffic going over our roads.

Mr. ANDERSON. I have done some driving over roads in this country and I think you are a long way from the ideal road.

Mr. PAGE. I fully agree with you. Just as fast as we get something stronger, they quadruple the weight of the loads. In New York City last year they were hauling material for the subway with 15-ton trucks; as a result they broke up granite cobblestones.

Mr. HAUGEN. Do they ever build any cement or concrete roads, reinforcing it with iron?

Mr. PAGE. We have built a good many concrete roads, but we have never reinforced them with iron, because we do not see any use in it. The only object in reinforcing concrete is to help the tensile strength, because concrete will not stand that kind of a strain.

Mr. HAUGEN. Concrete is made out of cement?

Mr. PAGE. Yes, sir; but it cracks. But with a road laid on a solid foundation, no part of it is being subjected to its tensile strength; it is very expensive to put iron in it. The cracks can be patched with a little bitumen.

Mr. McLAUGHLIN. I heard it stated a short time ago that the Government was planning to build 250 miles of military roads on the island of Oahu, on which Honolulu is located. Has your department been asked to plan the roads? Has your advice been asked respecting the building of them?

Mr. PAGE. No; I have never heard of that.

Mr. LEE. What is the most durable road that you have built in your experiments?

Mr. PAGE. There are several types which under the same traffic are equally good; for instance, the best types of asphaltic concrete construction (asphalt or tar, with concrete foundations), or the best types of concrete construction, or the best type of brick construction. The local conditions—that is, availability of the material and cost of the freight haulage—would largely govern the type that I would select.

Mr. HAUGEN. How about the creosote blocks?

Mr. PAGE. They are excellent, if you do not put in too much creosote. The trouble is, I think, that the creosote industry has rather spoiled that type of construction in this country. In Europe you find practically all the cities paved with it.

Mr. HAUGEN. Does not the creosote make it more durable?

Mr. PAGE. No; they put in so much creosote that for years afterward on every hot day it oozes out—a sticky mass, in some instances three-quarters of an inch thick, which will nearly pull your shoes off. American city engineers are against it. Of course, that is a very high type of construction.

Mr. HAUGEN. Would you recommend that for heavy traffic?

Mr. PAGE. I certainly would. I know of nothing better.

Mr. HAUGEN. It is quite expensive.

Mr. PAGE. It lasts a long time and is especially suitable in a wet climate.

Mr. HAUGEN. It has a smooth surface?

Mr. PAGE. A smooth surface and easy trackage.

The CHAIRMAN. Take up your next item, number 49, for investigations of the chemical and physical character of road materials. There is no change in that?

Mr. PAGE. None at all.

The CHAIRMAN. And the item practically explains itself?

Mr. PAGE. Yes, sir; exactly.

The CHAIRMAN. Any questions on that? Take up your next one, item 50, for conducting field experiments and various methods of road construction and maintenance, \$60,000. There is no change in that?

Mr. PAGE. No, sir.

The CHAIRMAN. I would like to ask how you differentiate the work under this item from that in item 49, for testing road materials.

Mr. PAGE. The first relates to laboratory tests and the other to field tests. Neither one is of any account without the other.

The CHAIRMAN. This item goes hand in hand with number 49; except that one is field and the other is laboratory work?

Mr. PAGE. Yes, sir. This is field. Some of you have undoubtedly seen some of the experimental roads around Washington, which we have constructed under this item. We have them running from about 10 cents a square yard to about \$2.86 a square yard, and we keep an accurate record as to the unit cost of construction and the

cost per square yard per year for maintenance, also a record of the traffic.

Mr. RUBEN. It would be more informing to us if you would place on the sign which you set up a statement showing what the different types of roads cost.

Mr. PAGE. I have a blue print of every road and would like to supply you and get you interested in this work; those blue prints will give you all of the data connected with the various types of construction.

Mr. RUBEN. I have ridden over these roads and read the signs, but I did not know how much they cost.

Mr. HAUGEN. Is the tendency toward building a hard-surface road?

Mr. PAGE. Near the cities traffic increases to such an extent that the cheaper type of construction will not stand it. It costs more to maintain the cheaper roads than to invest a larger amount of money in them in the first place.

The CHAIRMAN. Anything further on that item, gentlemen? Take up item 51, for investigating and reporting upon the utilization of water in farm irrigation, etc.

Mr. PAGE. There is no change in that. We have the cooperation of experiment stations and agricultural colleges throughout the arid States in the irrigation investigations. There has been practically no change at all in the work this year from that conducted during the last few years.

The CHAIRMAN. The committee is familiar with that line of work. Are there any questions, gentlemen?

Mr. HAUGEN. Do you deal with drainage also?

Mr. PAGE. That is in another item.

The CHAIRMAN. Take up item 52, for drainage investigations, and so on.

Mr. PAGE. That work is carried on practically the same as it has been in previous years.

The CHAIRMAN. It occurs to me that on account of the war situation there might be a slackening in drainage work throughout the country.

Mr. PAGE. There has been a slackening in the drainage district work, but the work with the farmers is much heavier; in fact, we have had more work than we could care for promptly. Forty per cent of the drainage engineers have joined the Army, and it has been difficult to get other engineers. Twenty per cent of the entire engineering force of the Office of Public Roads has already entered the Army.

Mr. McLAUGHLIN. Of your own engineering force?

Mr. PAGE. Yes, sir.

Mr. HAUGEN. Draintile has advanced considerably in price, too, has it not? It is very expensive now.

Mr. PAGE. The price has increased about 30 per cent, yet manufacturers in some localities have not been able to keep up with their orders.

The CHAIRMAN. Under the circumstances, I was wondering whether it was necessary to retain this appropriation for the time being. Could it not be reduced considerably? It occurs to me that you are not going to have the amount of work in drainage investigations during the progress of this war and probably for several years afterwards that you had up to a few years ago.

Mr. PAGE. I can promise you, gentlemen, if we do not that the money will go back into the Treasury.

The CHAIRMAN. I am sure of that, but it makes a very good appearance to sometimes reduce these items?

Mr. PAGE. I think that might apply to all branches of the work, except to direct agriculture. Of course, by drainage the farmers are trying to get more land under cultivation, and many have been draining their wet lands. We have not been able to promptly meet the demands for assistance in drainage work.

Mr. HAUGEN. If it does not take up too much time, I would like to have the doctor give an explanation of the character of the work done.

Mr. PAGE. It includes tile drainage, terracing of eroding farm lands, and assistance to farmers who desire to organize districts and drain their wet lands in order to make more land available.

Mr. HAUGEN. What have you in mind?

Mr. PAGE. The laws vary a great deal in the different States.

Mr. HAUGEN. The States take care of that in all the work, from beginning to end.

Mr. PAGE. There are very few States that appropriate a cent of money for drainage. Your State does.

Mr. HAUGEN. Suppose a farmer wants to drain his farm.

Mr. PAGE. A very large number do.

Mr. HAUGEN. Do you furnish a man from the department to do the surveying?

Mr. PAGE. Yes, sir; we do that in localities where tile drainage is not understood; we assist the farmer in getting the work started, where he is inexperienced in this kind of work.

Mr. HAUGEN. On small projects of that kind?

Mr. PAGE. Yes; frequently a single small farm will be the beginning of drainage work in a community or of a drainage district, where a number of farms are combined together to get rid of a volume of water. In a great many cases one farmer drains his land by turning the water over on the other man's land, and in order to avoid this the formation of districts is necessary.

Mr. HAUGEN. I understand that, but it is all done by the State or county officials.

Mr. PAGE. Only in a very few States.

Mr. HAUGEN. I am speaking of my own State.

Mr. PAGE. In Iowa a very large amount of drainage work is done, whether any State in the Union has done any more than Iowa.

Mr. HAUGEN. If four or five farmers request a man from the department, do you send him down there?

Mr. PAGE. Certainly; we have done that frequently.

Mr. HAUGEN. Is that not rather expensive?

Mr. PAGE. No more so than where the Government helps in other directions.

Mr. HAUGEN. I take it that every community has its engineer and that surveys can be had by paying for them?

Mr. PAGE. It does not appear so from the requests we get.

Mr. HAUGEN. Where do the requests come from?

Mr. PAGE. From individuals, farmers' organizations, drainage districts, and county and State officials.

Mr. HAUGEN. All over the country?

Mr. PAGE. All over the wet States. In the arid States drainage is necessary where too much irrigation water is used on the lands and the lands become waterlogged; then it is a question of drainage.

Mr. HAUGEN. Do you do any of that work in the immediate vicinity of Washington?

Mr. PAGE. We have done some work in Maryland, New Jersey, North Carolina, and Virginia. We have done work in about 30 States in the humid region during the past year.

Mr. LEE. I think you have been doing some in Georgia.

Mr. PAGE. Yes, a great deal in Georgia and in South Carolina, North Carolina, and along the coast.

The CHAIRMAN. Anything further? If not, take up your next item, 53, for investigating farm domestic water supply and drainage disposal, \$60,000, of which \$35,900 shall be immediately available.

Mr. PAGE. There is \$35,900 increase in that item. That is entirely for the standardization of farm implements. It is put in as an emergency request and applies particularly to the tractor. At the present time it is obvious that with the probable shortage of horses on account of the war, it will be necessary to develop and standardize the tractor as much as possible. As it is to-day it is very difficult to decide anything about tractors. They are rated in horsepower by many different methods, and the manufacturers as well as the farmers are very anxious to get a Government rating on them and also to get the various other farm implements standardized, so that there will be some method of comparison of the power available and that required. The Secretary has asked for that as an emergency item.

The CHAIRMAN. You propose to install a plant?

Mr. PAGE. That will be installed in the building already provided for on the Arlington Farm.

Mr. RUBEY. Can you do that kind of work under the language of this item?

Mr. PAGE. Certainly. The present authority covers "all agriculture problems involving mechanical principles." That is pretty broad.

Mr. RUBEY. Yes; I did not notice the reference to "mechanical principles."

The CHAIRMAN. And the work to be undertaken with this \$25,900 is regarded as in the nature of an emergency proposition?

Mr. PAGE. Yes, sir; that is the reason we ask that the money be made immediately available.

The CHAIRMAN. And your plan is to undertake to standardize farm machinery?

Mr. PAGE. Yes, sir.

The CHAIRMAN. Especially tractors?

Mr. PAGE. Yes, sir.

Mr. RUBEY. Suppose you did standardize them, how are you going to enforce that standardization? You can not do that?

Mr. PAGE. Take the case of the tractor, which is one of the largest and most expensive pieces of farm apparatus, and for which a standard method of horsepower rating is most needed. To-day neither the weight nor the size (the bulk) gives a measure of the horsepower or pulling power of the tractor. We wish to make tests on tractors of all types and to determine the actual horsepower developed, both at the flywheel and at the drawbar, by direct measurements on a

dynamometer. We also wish to determine the fuel consumption under various loads, the weight of the machine standing still, and the distribution of the weight when working under different conditions. This latter is an important factor and can be determined in no other way. When these points have been determined for any one make and size of tractor, we will issue a card to the manufacturer stating the values found, provided the manufacturer has agreed that he will not make any essential changes in the design of that machine without notifying the department and allowing the machine to be rerated. By this means the farmer or other purchaser of a tractor will know in advance what power he can expect to get from the tractor under standard conditions. To-day he has no means of knowing definitely, as the horsepower ratings of tractors are established arbitrarily. In some cases the power is estimated; in other cases it may be determined by making Prony brake tests on the flywheel. In a few cases the manufacturers attempt to determine the power by actual field tests, but, so far as I know, no concern has testing apparatus that will permit it to carry on this work with any degree of accuracy.

Mr. McLAUGHLIN. What assurance have you that the manufacturer will properly publish your finding?

Mr. PAGE. The committee of manufacturers who requested us to undertake this work stated that they would put a tag on the machines that they sold giving the Government ratings.

Mr. LEE. The farmer would not trade with him if he did not, would he?

Mr. PAGE. I do not know. I certainly should not if I were a farmer.

Mr. McLAUGHLIN. Is there any penalty attaching to failure to do that or for making any false statements?

Mr. PAGE. That will be a matter that the Secretary will have to decide. I think we would decline to issue any more cards to such a party. I do not think there is any regulatory legislation on that.

Mr. HARRISON. The manufacturers themselves are anxious for this standardization.

Mr. LEE. I think a great many of the tractors are improving.

Mr. HARRISON. There is no doubt about it. This is not strictly an emergency proposition in the sense that we have been using that word.

Mr. PAGE. It is desired to have the funds for this work made immediately available.

Mr. HARRISON. It is emergency work in the sense that it ought to be undertaken as soon as possible, because there is great need for work of this kind, and we can gain much time if the appropriation is made immediately available.

Mr. PAGE. This is really the only increase I am asking for this year.

Mr. RUBEN. This is a very important work. I just wanted to have it clearly explained how it would be practicable to carry it out. I am very well satisfied with your explanation.

Mr. HARRISON. A large number of suggestions have come from farmers themselves that work of this kind should be undertaken.

Mr. PAGE. They ask me what kind of a machine to buy, and I do not know.

Mr. HAUGEN. If they tell you the power desired and the purposes for which they want to use it, could you tell them the engine to buy?

Mr. PAGE. I do not know how they arrive at the horsepower.

Mr. HAUGEN. If, for instance, they say, "Here, I want a tractor that will pull three plows"—

Mr. PAGE. If it has a draw-bar pull of 3 horsepower, I could. It says right on this tag how many horsepower this particular tractor has. That would show the horsepower that could reasonably be expected from that tractor under normal or standard conditions. It is not feasible to state the power of a tractor in terms of the number of plows it will pull, as the power required to operate a plow under some conditions and in some kinds of soils may readily be two or three times that required under other conditions.

Mr. HAUGEN. Some engines are made more durable than others.

Mr. PAGE. The matter of durability could not be determined definitely in the brief tests we would be compelled to make in the beginning of this work. Later on this factor may be included.

Mr. HAUGEN. I take it that the power is a matter of size and the quantity of gasoline?

Mr. PAGE. Not necessarily. The type of gearing, distribution of weight, details of design, and care in operation have as much effect as mere bulk.

Mr. HAUGEN. Then you pass on the construction of it?

Mr. PAGE. The construction determines the durability more than does anything else. That is, if you use poor iron in making an engine, it wears out quicker, to be sure, but I do not think we could go into that at this time.

Mr. HAUGEN. You simply test it as to the power?

Mr. PAGE. As to the power and draw-bar pull.

Mr. HAUGEN. What information other than that relating to power can you give them?

Mr. PAGE. I do not think we could attempt to go further than to give them the draw-bar pull, the actual horsepower of the engine, and the fuel consumption.

Mr. HAUGEN. That is not very satisfactory. That could be tested out by starting the engine.

Mr. PAGE. No; you could not do that.

Mr. HAUGEN. Running it over the scale, weighing it, and testing it?

Mr. PAGE. Yes; you could get the weight, but how would you get your draw-bar pull under those conditions?

Mr. HAUGEN. Pull some plows.

Mr. PAGE. You can not tell unless you test them all, and under all conditions, which would involve much more work and expense than making the tests we propose.

Mr. HARRISON. Of course, a farmer would be directly benefited by having available a better, standardized product.

Mr. HAUGEN. If this work is to have any practical value, it would be necessary to test each tractor.

Mr. PAGE. We could not do that. The manufacturers agree not to change any essential features of the ones we test without notifying us. If they get out any improvements, new tests will be made.

Mr. HAUGEN. The durability is of just as great importance as the power.

Mr. PAGE. Of course, you can take the very best engine in the world and break it in 24 hours if it is not handled right.

Mr. HAUGEN. Some automobiles will last, for instance, a year and others will last several years. The same is true of tractors. There is a difference in their construction; and we ought to know something about the material they are made out of and about their construction.

Mr. PAGE. They all use cast iron to a great extent.

Mr. HAUGEN. Some use steel.

Mr. PAGE. Cast iron is better.

Mr. HAUGEN. They use steel in the gears.

Mr. PAGE. In the gears they do, but then comes the question as to what kind of steel.

Mr. HAUGEN. If I should ask you the question, what truck ought I to buy for a certain use, could you answer the question?

Mr. PAGE. No, sir.

Mr. HAUGEN. You could not answer what make?

Mr. PAGE. No, sir.

Mr. HAUGEN. What you would do would only be to test the power?

Mr. PAGE. The power and the tire.

The CHAIRMAN. Anything further on that item, gentlemen? If not, take up item 54. That is your general administrative-expense item, where you have an increase of \$8,860.

Mr. PAGE. That is the item to which I referred at the beginning of this statement.

The CHAIRMAN. You explained that in the beginning of your testimony?

Mr. PAGE. Yes, sir.

The CHAIRMAN. Are there any further questions on that?

Mr. HAUGEN. Mr. Chairman, did you come to any understanding as to the amount that the two items for irrigation and drainage investigations could be cut?

The CHAIRMAN. No.

Mr. HAUGEN. Did the doctor suggest any?

Mr. PAGE. I strongly urge that they be not cut at all.

Mr. HAUGEN. I understood you to say that most of your engineers have gone into the military service.

Mr. PAGE. Yes, sir; but we have replaced them as fast as we could, in order to meet the demand that the farmers are making on us.

The CHAIRMAN. Have you finished your laboratory building at Arlington?

Mr. PAGE. No, sir; we have not been able to do so as yet, the Fine Arts Commission has held it up so far. I have submitted two designs and they have turned them down. We can not erect a very beautiful building for \$75,000 in these days.

Mr. HAUGEN. Does the Fine Arts Commission's jurisdiction extend to the farm over there?

Mr. PAGE. It is proposed to erect this building right in line with the Mall, and we all hate to see anything very objectionable put there with the new buildings that they are constructing at Arlington, and the Lincoln Memorial all right in line with it. I am trying to get a building that can not be seen at all.

Mr. HAUGEN. We will have to move the farm, I guess. We can not very well put up castles for use as barns and hog houses, can we?

Mr. CANDLER. They tell you to make it beautiful, do they, Doctor?

Mr. PAGE. Well, unobjectionable.

Mr. HAUGEN. What is required? Your proposition was to build it of concrete?

Mr. PAGE. My proposition was to build it of concrete. In fact, I had an offer of 3,000 barrels of Portland cement with which to do it. The cement manufacturers were willing to donate that. I designed a building which I thought was in harmony with the Lincoln Memorial, but they turned it down. When they turned it down, I asked them to please give me some suggestions. It is very easy to say things are ugly. If they would tell me on what lines they want it done, I would be much obliged. They insisted upon our submitting a layout for the general future development of the farm before they could pass upon the design for our building. A general plan is being prepared and will be submitted, with a new design for our building, as well as suggestions of a general nature for the design of future buildings. I hope to have the matter straightened out very soon.

The CHAIRMAN. Anything further on this item?

Mr. CANDLER. Let me ask you a practical question on roads, for my information. In my county, Alcorn County, Miss., they are building a good many roads and spending lots of money on them. Just before I left home the president of the board of supervisors—that board having charge of the road construction of the county—asked me about getting Federal aid. If they want it, how can they secure it?

Mr. PAGE. By applying to the State highway department.

Mr. CANDLER. The county commissioners apply to the State highway department and they apply to the Secretary of Agriculture, and after the Secretary approves it then the money is available?

Mr. PAGE. The money is available.

Mr. McLAUGHLIN. It has to be a rural-delivery road.

Mr. PAGE. A road over which the United States mails may be transported.

Mr. CHAIRMAN. Any further statements, Dr. Page?

Mr. PAGE. No, sir.

The CHAIRMAN. Dr. Page has furnished a summary of his work, which I will ask to go into the record.

Mr. PAGE. I have put that down, explaining every one of these items in much fuller detail than I have here.

The CHAIRMAN. It explains these other items, and the other bureaus are doing the same thing. Just let that go into the record.

(The statement referred to follows.)

SUMMARY OF PRINCIPAL ACTIVITIES OF OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
GENERAL ADMINISTRATION.....	\$16,000	\$16,000
To administer the investigational activities of the office, to carry on its business affairs, correspondence, accounting, etc.		
ROAD MANAGEMENT.....	41,040	40,040
<i>Supervision.....</i>	<i>4,405</i>	<i>4,405</i>
To direct and supervise the various research and extension activities under this group and conduct routine office business, including correspondence, maintenance of records, purchase of supplies, and equipment, and other clerical work.		
<i>Collection of current data relating to highways.....</i>	<i>7,435</i>	<i>7,435</i>
The object of this work is to collect and systematize all available information and statistics relative to highways and to compile road legislation. A circular is published each year giving in considerable detail the automobile registrations, licenses, and revenues applied to roads and requirements for the several States. An annual circular is also issued giving State highway mileages and expenditures. Current material is used freely for correspondence and reference purposes, and the road laws of the various States are revised and kept up to date for office use in connection with Federal-aid and other work.		
<i>Utilization of convict labor in road construction.....</i>	<i>2,130</i>	<i>900</i>
Information of a most exhaustive character as to the best methods of housing, managing, feeding, and working convicts on public roads was derived from investigation, supported by most rigid demonstration, and was given out in official bulletins. It is believed that wherever convicts may be utilized on road work the information compiled by this office will be of very practical value.		
<i>Economic studies of county and township highway systems.....</i>	<i>5,228</i>	<i>5,228</i>
Personal studies have been made of a number of counties and townships in the United States on the organization, procedure, cost of operation, and results obtained, the types of road, character of materials, methods of maintenance which are yielding the best results at the least cost, and the elements of weakness in various local systems of management. This information is to be used as a basis for the preparation of a series of bulletins bearing upon local road construction, maintenance, and administration. About 100 counties have been selected for study and approximately one-half of the studies have been completed. The studies have already led to the preparation of a bulletin on cost keeping.		
<i>Economic studies of State highway systems.....</i>	<i>16,532</i>	<i>15,532</i>
The object of these studies is to ascertain the character of the organization, working plan, cost of operation, systems of report and record, character and cost of work done, classification of highways and purposes served, and to so correlate and present the information as to make it of use to the National Government for military and postal purposes, for the administration of the Federal aid road act, and to make it of use to the State in the establishment and management of systems of State highways.		
A greater amount of constructive State highway legislation was enacted during the past year than in any single year in the history of the country. The office aided in this important development by giving to the States the results of an exhaustive investigation. Drafts of tentative State highway acts, with analyses and explanatory data, were prepared upon request for the States of Oregon, Indiana, South Carolina, Texas, New Mexico, South Dakota, Missouri, Nevada, Wyoming, Nebraska, and Arkansas, and general information was furnished to several other States.		
An economic highway survey was made in the States of Maryland, New Jersey, and Connecticut, and a plan was worked out for the general extension of this survey in cooperation with State highway departments. Topographic sheets were made as a basis and from these highway maps were prepared expeditiously, in the greatest detail, at an average cost for field and office work, including materials, of about 75 cents per mile. Much of the information was adapted to military uses and was furnished to the War Department as rapidly as the work could be completed.		
<i>Traffic studies.....</i>	<i>2,117</i>	<i>2,117</i>
To assemble all practicable data on the regulation of traffic, the adaptation of various types of road surfaces to traffic conditions, and the relation of maintenance methods and cost to traffic requirements. Engineers are assigned from time to time to study methods pursued in the various States and counties with reference to the handling of traffic problems. Traffic studies were continued on 17 post roads, being built under the \$500,000 appropriation act of August 24, 1912. These data are being assembled for a final report to Congress.		
<i>Advice, lectures, and demonstrations.....</i>	<i>3,193</i>	<i>4,423</i>
The office furnishes expert advice on legislation, organization, and road management, and aids in intelligent propaganda through conferences, lectures, and demonstrations.		

¹ An increase of \$9,850 is involved, due to transfers to the statutory roll.

SUMMARY OF PRINCIPAL ACTIVITIES OF OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
ROAD BUILDING AND MAINTENANCE INVESTIGATIONS.....	\$141,790	\$141,036
<i>Supervision.....</i>	8,000	8,000
<i>Investigations of costs of road maintenance.....</i> Information is being collected which will be used in establishing a definite relation between the amount of traffic and the cost of maintaining the various types of road surfaces, including earth, gravel, bituminous-macadam, and other materials.	2,800	2,800
<i>Investigations of various types of road construction and costs.....</i> Studies have been continued of certain types of road construction which have been developed locally with available material, in order to be in a position to advise in regard to types of construction such as bituminous-sand, rock asphalt, bituminous-surfaced gravel, patented types, etc.	5,000	5,000
<i>Object-lesson roads.....</i> Local officials in charge of road work in various parts of the country were instructed by representatives of the office as to the best methods of road construction. Highway engineers are detailed to superintend the construction of short sections of road which serve as object lessons to local authorities, the cost being borne locally.	18,000	10,000
<i>County road systems.....</i> Upon request the office sends highway engineers to study the roads of a county or other political subdivision and prepare general plans and specifications for their administration, improvement, and maintenance. These engineers go over the situation thoroughly in the county to which they are sent, taking into account all the factors entering into the local problems and then, in the light of their wide experience, formulate a plan of action for the improvement of the roads throughout the county. Many counties have adopted the department's recommendations, having reorganized and systematized their highway improvement work, and are now working along definite lines as to the ultimate system of roads that will be built.	25,080	15,060
<i>Inspection and advice.....</i> Upon request of road officials or interested civic organizations for assistance in the nature of advice on special problems, highway engineers are detailed to make inspections of local conditions and then give the required advice. Occasionally engineers are assigned to deliver lectures on specific and general highway-improvement problems before meetings of road officials, highway associations, and mass meetings of citizens. Many communities have improved their roads in accordance with advice given and some have employed experienced highway engineers to continue such work. Lectures have resulted in informing residents as to how roads should be improved, the approximate cost, and the results and benefits to be expected. Of especial moment has been the assignment of highway engineers to advise with the constructing quartermasters of the 16 National Army cantonments and to supervise the construction of all roads in those cantonments, thus assisting the War Department in one of their tremendous undertakings. The construction of these roads has been accomplished most expeditiously and satisfactorily, and the cost of the work, which was planned and supervised under the direction of the department's engineers, approximated \$5,000,000.	55,000	63,000
<i>Superintendence of county roads.....</i> Upon request, the office from time to time assigns engineers to demonstrate to county officials the advantages accruing from the supervision of all county roads by one skilled in highway construction and maintenance and the advantages of centralized control over all roads in a county. As a result of this work, many county officials have been convinced of the advantages of centralized control in the hands of qualified men and have adopted the system recommended.	4,000	4,000
<i>Bridge construction in connection with road building and maintenance.....</i> Upon request, the office furnishes local officials with plans and specifications for bridges and investigates conditions and advises authorities interested as to the best methods of bridge construction to meet their peculiar needs and conditions. A considerable amount of work has been done in assisting State highway departments on difficult bridge problems, many of them destined to become Federal-aid projects. Culverts and bridges have been designed for use by engineers representing State and local officials. Notable examples of this work were a design for a bridge over the Appalachian River between Jackson and Gadsden Counties, Fla., and a 575-foot suspension bridge over the Snake River Canon in Twin Falls, Idaho.	22,000	32,000

SUMMARY OF PRINCIPAL ACTIVITIES OF OFFICE OF PUBLIC ROADS AND RURAL
ENGINEERING—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
ROAD BUILDING AND MAINTENANCE INVESTIGATIONS—Continued.		
<i>Road maintenance, post roads, advice, and inspection</i> Inspection is made from time to time of the 17 post roads constructed under the act of Aug. 24, 1912. This inspection will enable the office to secure accurate and detailed maintenance cost data on a large number of types of construction. During 1917 systematic maintenance was continued on the post roads in Ohio, Maine, Maryland, and Forsyth and Davie Counties, N. C., funds being provided locally.	\$1,200	\$1,200
<i>Improvement of post roads (act of Aug. 24, 1912)</i> The improvement of post roads under the act of Aug. 24, 1912, was continued and will be completed in the fiscal year 1918. Sixteen projects, resulting in the improvement of 388.8 miles of road, were completed at the close of the fiscal year 1917. The Dubuque County, Iowa, post road is the only post road remaining to be completed during 1918.	1,700	.....
INVESTIGATIONS OF CHEMICAL AND PHYSICAL CHARACTER OF ROAD MATERIALS	\$1,200	\$1,220
<i>Supervision</i> A conference of State highway testing engineers and chemists was called by the office for the purpose of recommending standard forms for specifications, tests, reports, and methods of sampling for road materials. The findings of the conference were published as Department Bulletin 555. The recommendations made have been of great use in the preparation of typical specifications for various types of road materials, which work is now under way.	6,500	6,500
<i>Routine chemical testing and inspection</i> Samples of bituminous materials submitted by State and county officials or recognized good-roads associations are tested free of charge, when by so doing information may be secured for the benefit of the office in its efforts to coordinate laboratory results with service tests and to aid it in the preparation of typical specifications for materials of this character. During the past fiscal year 426 samples were examined. This work is continuous. The results of tests of such materials used in the experimental construction and maintenance of highways by the office or under the supervision of the office are published annually in progress reports.	5,100	4,700
<i>Microscopic examination and classification of road-building rocks</i> 681 samples of rock and other nonbituminous materials were examined microscopically and classified during the past year. This work is continuous.	1,000	900
<i>Research on dust preventives and road binders</i> Research upon the properties of dust preventives and road binders is being continuously conducted. During the past year a paper entitled "The Toughness of Bituminous Aggregates" was published in the Journal of Agricultural Research. Among the subjects at present being studied are the effect of exposure and weather upon various grades and types of petroleum, asphalt, and tar products; the thickness of bituminous films on various types of mineral aggregates with relation to bituminous concrete; and the effect of various manufacturing processes upon bituminous dust preventives and road binders. An experimental plant for studying the various refining methods has been completed and preliminary experiments carried out upon the distillation of Mexican petroleum in the manufacture of road oil and oil asphalts. It is proposed to continue these experiments upon Texas, California, midcontinental and southern Illinois petroleum, and also upon crude tars obtained from various parts of the country. It is felt that this investigation will prove of great value not only to the manufacturer but also to the consumer in bettering the grades of bituminous materials now used for road work.	6,100	7,500
<i>Experimental bituminous road construction and maintenance</i> Plant and laboratory supervision was furnished for over 4 miles of an experimental bituminous-gravel mix road in Virginia, as well as the surface treatment with various grades of oil and tar of gravel roads in Virginia and Alabama. Numerous inspections were made of experimental roads constructed by the office and others in various parts of the country. The experimental highway construction and maintenance work of the office is published annually in a progress report. A department circular upon experimental roads in the vicinity of Washington, D. C., was also published.	3,500	3,180

1 Completed.

SUMMARY OF PRINCIPAL ACTIVITIES OF OFFICE OF PUBLIC ROADS AND RURAL
ENGINEERING—Continued.

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SUMMARY OF PRINCIPAL ACTIVITIES OF OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING—Continued.

Appropriations and activities	Allotment (lump fund).	
	1918	1919
FIELD EXPERIMENTS IN ROAD CONSTRUCTION AND MAINTENANCE.....	\$60,000	\$60,000
The work done under this appropriation in past years has proven of incalculable benefit to engineers throughout the United States. Many engineers visit and inspect these roads, and the office is constantly receiving inquiries about this work.		
<i>Supervision.....</i>	2,000	2,000
<i>Traction tests.....</i>	2,500	Suspended.
Traction tests were made to determine the effect of width of tire, diameter of wheel, type and size of axle bearing, kind of power, and method of application of power and tractive effort required to haul vehicles over various types of road surfaces; to obtain comparative data on the resistance offered to traction by unimproved and improved road surfaces and by grades in the case of automobiles and horse-drawn vehicles, and to obtain data on the comparative pulling power and sustained effort and their relations to light and heavy draft animals. The draft and horsepower required to operate loads of various capacities were determined by the use of special recording dynamometers designed in this office. The tests were made with loads of different magnitudes and with vehicles having wheels of varying diameters and widths of tires. The work of calculating results of tests made in previous years was carried on throughout the year. A circular was issued recommending widths of tires that should be used on wagons of different capacities for use over earth and gravel roads.		
<i>Experimental road construction.....</i>	30,000	25,000
An experimental gravel road was constructed from Gum Spring to Mount Vernon, in Fairfax County, Va., a distance of about 1.75 miles, which was divided into three sections, each section receiving a surface treatment of different bituminous material.		
A bituminous gravel-concrete road was built from Hunting Creek Bridge to Gum Spring, in Fairfax County, Va., a distance of approximately 4.5 miles, with the exception of 600 feet, which was surfaced with an asphalt-soil mixture. The gravel aggregate was the run of the pit, crushed, screened, and recombined in definite proportions. This experiment is believed to be the first of such type of construction conducted in the United States.		
An experimental top-soil road was built from Dumfries to the Charawamsic Creek, in Prince William County, Va., a distance of approximately 4 miles, which was divided into 16 sections, each being surfaced with a soil of different analysis.		
During the present fiscal year surveys have been made and plans and specifications prepared for the experimental construction of a road in Alexandria County, Va., locally known as the Columbia Pike, from the Mount Vernon Avenue experimental road to beyond Barcroft, Va., a distance of over 3 miles. This work will be divided into a number of sections, each of a different type of construction, or in which different materials are used, most of these sections to be of a different type than those built heretofore. Arrangements have been made whereby Alexandria County, Va., will bear one-half of the expense of this work.		
A section of bituminous-macadam road has been built in the grounds of the Department of Agriculture, in which quartzite was used as a mineral aggregate, this being the first experimental road which this office has ever built with that material.		
<i>Experimental road maintenance.....</i>	22,500	20,000
All the experimental roads constructed in Montgomery County, Md., Alexandria County, Va., and in the grounds of the Department of Agriculture, Washington, D. C., which have been built with the appropriations made for field experiments, were maintained during the past fiscal year. Accurate cost records and traffic censuses have been kept so that such data is available for the information of engineers who come here from all over the country to inspect these roads. This information is also published from year to year in progress reports in order to make it as valuable as possible to persons interested in such work.		
The maintenance of a part of the Mount Vernon Avenue and Russell roads, in Alexandria County, Va., has been particularly expensive this year, due principally to a large amount of light artillery traffic.		
<i>Road and bridge foundation tests.....</i>	3,000	3,000
The apparatus developed during the past two years for measuring pressures against any structures due to the weight of superincumbent or adjacent earth fills has shown itself to be both practicable and simple to manipulate. With this device tests are now being conducted at Arlington Farm on the distribution of pressures through earth fills such as occur on highway bridges and culverts. The results are greatly needed by bridge designers. Thus far sand alone has been investigated, but it is planned eventually to cover all classes of filling material, such as clay, sand-clay mixtures, gravel, etc. It is also planned to make pressure studies of pavements and of concrete foundations of various thickness when placed on different types of subbase and subjected to concentrated load. Field experiments of pressures on actual structures are also under way. An enormous number of tile drains are destroyed annually due to lack of knowledge of earth pressures upon them. It is proposed to study this problem. Pressures in hydraulic fills are also being obtained by the use of the apparatus above mentioned. Numerous requests have been received for information bearing upon the subjects above mentioned. During 1917 a paper entitled "The Distribution of Pressure Through Earth Fills" was presented before the American Society for Testing Materials.		

SUMMARY OF PRINCIPAL ACTIVITIES OF OFFICE OF PUBLIC ROADS AND RURAL
ENGINEERING—Continued.

Appropriations and activities.	Allotment (ump fund).	
	1918	1919
IRRIGATION INVESTIGATIONS.....	\$102,440	\$102,440
<p>During the past year the accumulated results of irrigation investigations have been applied to the immediate increased production of food. To that end several bulletins dealing with practical phases of irrigation were revised and reissued and several new ones were published. In the field a large part of the work was to aid communities and individuals in designing and installing equipment for irrigation and the reorganization of their irrigation enterprises in such a way as to eliminate waste and duplication of effort. A prominent feature of that work has been the preparation of plans for the drainage of irrigated lands and assistance to communities in organizing districts for the installation of drainage works. There is an increasing demand for this practical application of the results of the investigations.</p> <p>While the course of the work has been changed somewhat to meet the national emergency, the more technical investigations having in view improvement in irrigation practice and a better use of our water resources have not been discontinued altogether. The two great sources of loss of water, outside of pure waste, are evaporation and percolation beyond the reach of plant roots. Very valuable results have been obtained in investigations along these lines that will help in changing irrigation practice so as to conserve our limited water supply and prevent the ruin of agricultural land by improper irrigation. Along with these investigations has gone the design of new and improved measuring devices, to make it possible for farmers to apply the proper quantities of water when they have learned what those quantities are.</p> <p>For the fiscal year 1919 it is proposed to go still further in the direction of applying the results of previous investigations to the emergency problem of increasing food production, with a consequent limitation of the more technical investigations.</p> <p>The greatest opportunity for immediate expansion in agricultural areas and increased crop production in the arid region lies in improving and reorganizing communities already developed, by improving canal systems, developing waste lands within existing enterprises, providing storage, and draining wet lands. In these communities transportation facilities, highways, and markets are already developed, so that the proposed development involves no question of colonization or settlement and few questions of general equipment for agricultural operations. Such work will involve the study of whole stream systems and their present and possible utilization and the necessary changes in irrigation and drainage works and in organization, and possibly in laws.</p>		
Supervision.....	8,000	8,000
Utilization of water in irrigation.....	26,800	40,000
<p>Investigations relating to method of using water and the practical work of assisting individuals and communities in extending irrigation and improving their practice. A report of cooperative studies of duty of water and irrigation practice in Salt River Valley, Ariz., extending over several years was prepared for publication by the State. A report of five year's cooperative experiments at the Davis Farm of the University of California, of three years' cooperative work in irrigating alfalfa in the Sacramento Valley, and of two years' cooperative investigation of the irrigation of rice was prepared for local publication in California. A report of one year's cooperative study of irrigation of meadows in eastern Oregon was prepared for local publication. A bulletin on irrigation in Florida was prepared and published by the department. Several Farmers' Bulletins on irrigation methods were revised and reissued. Plans for revising and combining canal systems in Utah were prepared and in part carried out.</p>		
Pumping for irrigation.....	16,800	13,000
<p>Investigations of equipment for wells and pumping machinery, as well as designing plants for individual farmers and advising as to its installation. The preparation of a general treatise on pumping for irrigation was continued. A report of pump tests made at the New Mexico Agricultural College has been prepared. A report on pumping for irrigation in Kansas and Nebraska has been prepared. A popular article on pumping on the farm was prepared and published in the Yearbook. Throughout the country considerable work was done in advising farmers and communities as to equipment for pumping and in designing pumping plants for them.</p>		
Appliances and equipment for irrigation.....	13,540	6,500
<p>Investigations of the design of irrigation equipment of all kinds, and advice as to its installation and use. A bulletin on spray irrigation has been prepared and published. A Farmers' Bulletin on small reservoirs has been prepared and published. A new type of nozzle for spray irrigation has been developed and public patent is pending. A new type of reinforced pipe for conveying water under pressure has been developed and is being tried in the field. Experiments in the manufacture and use of concrete pipe for irrigation have been conducted. Investigations of various structures used in irrigation canals have been carried on and reports are in preparation.</p>		

**SUMMARY OF PRINCIPAL ACTIVITIES OF OFFICE OF PUBLIC ROADS AND RURAL
ENGINEERING—Continued.**

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
IRRIGATION INVESTIGATIONS—Continued.		
<i>Flow of water in ditches, pipes, and other conduits.</i>	\$6,500	\$4,500
Observations to determine the carrying capacities of conduits of various kinds and developing formulae for computing capacities, to be used in the design and construction of new works. The results of measurements on wood pipe were published in Department Bulletin 276. Work on concrete pipes, begun in the previous year, were continued and a part of the report prepared for publication.		
<i>Measurement of water for irrigation.</i>	4,500	2,500
Laboratory and field experiments with measuring devices to develop inexpensive and reliable means of measuring water used. Several reports of the work at the Fort Collins laboratory were published by the department within the past year in the Journal of Agricultural Research and by the Colorado Experiment Station, and a Farmers' Bulletin on farm weirs has been prepared and published. Application for the public patent of a promising device developed at Fort Collins has been made. A report of work at Davis has been published by the University of California.		
<i>Customs, regulations, and laws relating to irrigation.</i>	11,100	11,500
Studies of the operation and the effect of customs, regulations, and laws on the use of water in irrigation, and the aiding of communities and States in the organization of irrigation enterprises and the drafting of irrigation legislation. A report on the operation under the irrigation district laws of the Western States was partially prepared. A report dealing with the districts in California has been prepared and published by the State, and reports on cooperative enterprises and the mutual water companies of Southern California are in preparation. Studies of the extent and character of public control of irrigation, of the limitations upon irrigation practice in regulations, contracts, laws, etc., and of the methods of financing irrigation enterprises have been begun. The legislatures of the arid States were in session during the winter of 1917, and considerable work was done in advising as to proposed legislation.		
<i>Drainage of irrigated lands.</i>	10,500	12,200
Preparation of plans for the drainage of irrigated lands for individuals and communities, assistance in organization of communities for drainage purposes, and assistance to States in drafting drainage legislation. A Farmers' Bulletin on drainage of irrigated land was prepared and published. Reports on several drainage surveys have been prepared, and plans have been prepared for the drainage of several districts.		
<i>Expert advice and assistance.</i>	4,700	3,240
Advice on irrigation and the drainage of irrigated lands, aside from that given in regularly organized projects. Several plants were installed under the direction of this office and are in successful operation.		
DRAINAGE INVESTIGATIONS.	\$6,700	\$6,700
<i>Supervision.</i>	9,000	9,000
Considerable travel is required for field inspections and conferences with State and drainage district officials in planning proposed investigations and in supervising projects undertaken.		
<i>Construction, operation, and maintenance of drainage improvements.</i>	15,000	12,000
Studies are made of excavating machinery, of drainage pumping equipment, of cement drain tile, and of the depreciation of drainage works. Manuscript revision of Department Bulletin 71, "The Wet Lands of Southern Louisiana and Their Drainage," has been prepared, a report upon drainage pumping plants in Louisiana submitted, and a report upon "Storm Slides Along the Central Gulf Coast" distributed. The investigations are to be continued relative to results from drainage works constructed, the durability of cement drain tile, the silting and erosion of drainage ditches, the methods and costs for repair and maintenance of ditches, and the operation of pumping plants.		
<i>Drainage of peat, turf, and muck soils.</i>	2,500	\$,500
The special problems of draining these soils are investigated, including the relative advantages of tile drains and open ditches and the compacting of the soil due to drainage. A mimeographed report upon "The Subsidence of Muck Soils in Southern Louisiana" has been distributed. The study of such subsidence will be continued in Louisiana and Florida.		

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
DRAINAGE INVESTIGATIONS—Continued.		
<i>Organization, financing, and legal regulations of drainage districts</i> Study has been made of the organization of drainage districts under various State laws; of methods of financing such districts; of the effect of customs, laws, and regulations upon the districts, and of methods for assessing costs of drainage works. Farmers' Bulletin 815, "Organization, Financing, and Administration of Drainage Districts," has called forth many letters of approval from attorneys, engineers, bankers, and drainage district officials. By request, the provisions of a State drainage law were outlined in conference with committees of the West Virginia Legislature, and the law has been passed and approved. The study of assessment methods is to be continued.	\$4,000	\$2,000
<i>Run-off investigations</i> Measurements are made to determine the rates of flood flow for which provision should be made in planning drainage improvements and of the sizes of channels necessary to accommodate the flow. A report upon run-off measurements in western Tennessee, determinations of Kutter's roughness coefficient, has been distributed, and manuscript upon "Run-off from Drainage Districts in southern Louisiana" has been prepared for publication. These investigations are being made in several States and should be continued for a number of years.	10,000	10,000
<i>Drainage of tidal marshes</i> Investigations are made to learn why many attempted reclamations have been unsuccessful and of the proper arrangement of sluices and ditches. An old embanked area in New Jersey was examined and plans made for improvements. Further studies will be made as opportunity is afforded.	1,000	1,000
<i>Irrigation in humid regions</i> This work was transferred from the irrigation division to the drainage division of the office in July, 1917, for convenience of supervision. It embraces the study of irrigation equipment and appliances for farm-irrigation systems, of pumping for irrigation, and of the value of irrigation in the Eastern States. The accomplishments of fiscal year 1917 are included in the statement under Irrigation Investigations. It is planned to continue the studies of small pumping plants, of materials suitable for distribution pipes, of irrigation nozzles, and of conditions which make irrigation profitable.	4,860	5,000
<i>Drainage of tillable lands (research)</i> The problems of designing tile drains are studied, including depths, spacings, arrangements, and sizes best suited to various conditions of soil, climate, and topography. Investigations are made of the best types of terraces to prevent washing or gullyng hillside fields. Department Bulletin 512 has been issued on "Prevention of Erosion of Farm Lands by Terracing." Experimental data have been secured on the capacities of tile drains, and a report upon this work is to be prepared. The measurements to determine the effect of drains upon the ground-water table will be continued.	15,000	12,500
<i>Drainage of tillable lands (extension)</i> Surveys and drainage plans have been made for 202 farms in 18 States. A number of field demonstrations of tile-drain construction have been given under informal cooperation with the county agents. A course of 5 lectures and 5 field demonstrations was given at the short course in agriculture of the State college at Athens, Ga., in January, 1917. This work is continuous, and it is planned to do a greater amount of it in 1919.	15,000	25,000
<i>Drainage of overflowed lands</i> Drainage surveys and plans were prepared for 10 overflowed districts, including the Kootenai River Valley, Idaho, 34,000 acres; Saginaw River Valley, Mich., 125,000 acres; Clear Poggy River Valley, Olla., 40,000 acres. Reports of engineering inspections of 17 other proposed districts were made. This work is continuous, the surveys being made of typical districts to serve as demonstrations.	12,000	10,000
<i>Drainage of swamp lands</i> Surveys and plans for drainage were made for 6 swamp-land districts, and engineering inspections and reports were made for 4 districts additional. This work is continuous, the surveys being made of representative areas.	6,000	4,760

SUMMARY OF PRINCIPAL ACTIVITIES OF OFFICE OF PUBLIC ROADS AND RURAL
ENGINEERING—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
RURAL ENGINEERING.....	\$25,000	\$60,900
<i>Supervision.....</i>	2,000	2,000
<i>Investigations of farm domestic water supply and drainage disposal.....</i>	5,000	5,000
In addition to handling a large correspondence with individuals asking for assistance, much advice has been given through personal interviews and consultation. Surveys were made and plans are in progress for a typical gravity water supply for a southern farm; grades and dimensions established for sewers and septic tank at Bureau of Animal Industry Farm, Beltsville, Md.; plans for a septic tank to accommodate seven people on a North Carolina farm; and specifications for a drilled well in Idaho. An illustrated article entitled "Sewage Disposal on the Farm," for the 1916 Yearbook, and a comprehensive bulletin on Farm Domestic Water Systems, were completed. In connection with inquiries concerning the installation of hydraulic rams, full dimensioned sketch plans have accompanied the reply, also "Directions for the Installing of Hydraulic Rams." Designs were prepared for reinforced-concrete cisterns of various capacities embodying some unusual features for filtration and cleaning.		
<i>Investigations of the construction of the farm buildings.....</i>	13,000	13,000
The following designs were prepared for general distribution: One horse barn, two general-purpose barns, one farm house, one implement shed, and six hog houses designed to fit conditions on reclamation projects as determined by an investigation made during 1916. A model showing the layout and the buildings on a typical farmstead suited to the cattle-feeding industry in combination with general farming in the Middle West was completed and exhibited in Chicago, Ill., Ames, Iowa, and other places. There have been completed for other bureaus of the department 25 pieces of work, including the designing of and the preparation of complete drawings and specifications for buildings and groups of buildings to be used for experimental work. A few of these designs will be used for general distribution.		
<i>Investigations of rural-engineering problems involving mechanical principles.....</i>	5,000	40,900
Memoranda on ice-house construction, on stream measurement, floating water-power plants, uses and types of water wheels, Blau-gas windmills, tractor specifications, and on other subjects have been prepared for correspondence purposes. Designs have been prepared for various types of apparatus suitable for testing the belt and draw-bar horsepowers of tractors, the belt horsepower of stationary engines and motors, and also the horsepower required to operate various types of agricultural machinery. It is the intention to construct the necessary apparatus and to conduct tests, the results of which will give to the users of farm machinery exact information as to the power that can be derived from, or the power that must be provided to drive, different types of farm machinery and which will give to the manufacturer the exact information that will enable him to standardize his output so that it can be operated in conjunction with machines manufactured by other concerns. At the present time there is a wide discrepancy in power ratings and in structural details that leads to a large amount of unnecessary confusion in the operation of farm machinery. Specifications for a 10-ton electric crane for use in the color laboratory of the Bureau of Chemistry were prepared and one of the old buildings at Arlington Farm was redesigned to accommodate it. Among the subjects treated in the general correspondence are the following: Cement and concrete, electricity and electrical appliances, farm lighting plants, farm machinery and implements, fuels, gas engines, heat and heating, lighting systems, lightning arresters and rods, power development, pumps and pumping machinery, refrigeration, and spraying outfits.		

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

FEDERAL HORTICULTURAL BOARD

THURSDAY, JANUARY 10, 1918



WASHINGTON
GOVERNMENT PRINTING OFFICE
1918

AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Thursday, January 10, 1918.

The committee met at 10.30 o'clock a. m., Hon. A. F. Lever (chairman) presiding.

FEDERAL HORTICULTURAL BOARD.

The CHAIRMAN. The committee will come to order.
Gentlemen, turn to page 197, the Federal Horticultural Board.
Dr. Marlatt is here and will present the estimates.

STATEMENT OF MR. C. L. MARLATT, CHAIRMAN OF THE FEDERAL HORTICULTURAL BOARD, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Dr. Marlatt, we would like for you to conclude your statement just as soon as you can, as the House meets at 11 o'clock to-day. There are no changes in your statutory roll, Doctor, except as explained in your note there?

Mr. MARLATT. No.

The CHAIRMAN. And all your transfers have been made at the same salary and the lump fund reduced accordingly?

Mr. MARLATT. That is the case.

The CHAIRMAN. Doctor, suppose you briefly tell us something of your general work and then tell us about your pink bollworm fight.

Mr. MARLATT. The regular appropriation for the board involves all our quarantine and regulatory work to safeguard the entry of plants from foreign countries and to administer domestic quarantines. There are some 10 foreign and 7 domestic quarantines now in force. These involve such products as cotton, citrus fruits, Indian corn, and a number of minor items, including fruit from Mexico, the alligator pear, sugar cane, date palm, etc.

Mr. YOUNG of Texas. Do you let any cotton seed come across the Mexican line at all?

Mr. MARLATT. None whatsoever since the pink bollworm was discovered in Mexico. None comes into the United States, except from the Imperial Valley of Lower California. Cotton culture is continuous in this valley from California into Lower California, Mexico. There is no dividing line, and as long as the valley as a whole is free from the pink bollworm and is protected as to Lower California by a State quarantine, which is being enforced in cooperation with the Department of Agriculture, there is no reason why we should make any distinction between the Mexican and the American half of the

valley. The government of Lower California has entered very heartily into cooperation with us, and, in point of fact, nothing is permitted to come into Lower California which has any relation to cotton.

Mr. YOUNG of Texas. I live in the northeast part of the State of Texas, near the border. A few years ago a great many of the oil mills brought seed up into that country from across the Mexican border. I noticed this year, when I was home, that the Government had agents inspecting a little cotton field just across from my house, as well as other fields around there. On inquiry I found that this particular mill had bought some of this seed, and it was supposed that some of this seed was planted in that territory.

The CHAIRMAN. Was there any outbreak there?

Mr. YOUNG of Texas. None at all.

Mr. HEFLIN. Have any pink worms come into Texas?

The CHAIRMAN. Suppose you tell us about that now, Doctor?

Mr. MARLATT. Evidently the discussion of that subject can not be postponed.

The CHAIRMAN. And your other work——

Mr. MARLATT (interposing). Our other work is routine and regular. We have made some changes in and additions to our quarantines which are explained in a brief summary of these quarantines which I will submit.

The pink bollworm situation is the important one now confronting us. The discovery of this insect in Mexico on November 1, 1916, resulted in a prompt quarantine, promulgated November 4, prohibiting any further movement of cotton seed from any part of Mexico except the Imperial Valley in Lower California. Since that time no cotton seed, except as stated, has, to our knowledge, come across the line from Mexico. Congress gave an appropriation of \$50,000 to police the Mexican border and to take care of the mills which had received Mexican seed. All the Mexican seed which had been brought to some twelve mills in Texas was crushed, the mills were cleaned up thoroughly, and the area about the mills was cleaned of scattered cotton seed. The object was to prevent the escape of the insects from such seed. This work was done during the winter of 1916-17. During the following summer the fields about these mills were kept under constant inspection, to discover at the earliest moment any possible infestation by pink bollworms from the seed brought to these mills. No such escape of insects was determined during the summer, and we began to feel that the mill clean-up had been effective, but early in September a sporadic outbreak of the pink bollworm was reported in a field at Hearne, Tex., where one of these mills was located.

Mr. HEFLIN. This was in the summer of 1917?

Mr. MARLATT. The summer of 1917; yes, sir. Only a few infected bolls were found. The infestation was just beginning. It was significant only as indicating possible damage in the future. The infested field and all neighboring fields were promptly cleaned. No chances were taken. A force of laborers was gotten together, the planters and townspeople all heartily cooperating. There was a good deal of local money spent in carrying out the work.

Mr. YOUNG of Texas. How did you do that? Did you cut the plants and burn them?

Mr. MARLATT. We did more than that. The plants were pulled up by the roots, one at a time, thrown into piles, sprayed with kerosene, and the piles burned. Afterwards the fields were gone over by a force of men and women and every leaf and boll on the ground was picked up and burned. A great deal of cotton which had been picked but had not been ginned was burned. We did that not only in the infested fields but also in all other fields around the mill. Most of these fields were of small acreage—totaling 105 acres.

Mr. HEFLIN. Did you find this worm in any other fields?

Mr. MARLATT. It was found in three fields at Hearne.

Mr. HEFLIN. In the same locality?

Mr. MARLATT. All within half a mile of the mill. It was evident that the insect had escaped from the seed in the mill. It happened that there was a river and a forested area which gave a natural termination to this district on three sides. All the fields within this natural district were thus cleaned up, which carried us well beyond the infested fields.

Mr. YOUNG of Texas. That mill had crushed some of this Mexican seed?

Mr. MARLATT. It had crushed some of this Mexican seed and it had been cleaned up, as I have described. All these fields in the neighborhood of the mill were cleaned up and all the cotton that was picked within several miles of the mill was safeguarded, involving many hundreds of acres of cotton. This cotton was ginned, the seed promptly crushed, and the lint cotton shipped to Galveston and exported. All these precautions were taken to stamp out the insect at Hearne.

Mr. RUBEX. You are giving heroic treatment.

Mr. MARLATT. Absolutely. The work if not thorough is worthless.

Mr. HEFLIN. Do you know of any other localities?

Mr. MARLATT. In relation to the seed from Mexico, the insect has appeared near one other mill in Texas, viz, at Beaumont.

Mr. HEFLIN. How close is that?

Mr. MARLATT. That is near the eastern boundary of Texas.

Mr. YOUNG of Texas. It is something like 100 miles from Hearne.

Mr. MARLATT. This outbreak at Beaumont was discovered some six weeks later—October 15. The situation at Beaumont at first outlook was very favorable. The mill was 4 or 5 miles out of the city, and there was only one cotton field near the mill. There was no other cotton within 6 miles, and it looked very much as though eradication here would be a very simple proposition. The field near the mill was promptly cleaned up. An examination of the books of this mill disclosed that the owner had sold seed, evidently of Mexican origin, for planting in violation of his permit. The importation of seed from Mexico had been permitted for milling only and not for planting, and all the importing mills had agreed and were bonded to carry out this condition. Subsequent to the discovery of the insect in Mexico, we had some difficulty with this man at Beaumont in securing cooperation in the clean up of this mill, and it develops now that he violated his bond and sold seed to a considerable number of planters around Beaumont.

The red dots on this map [exhibiting map] indicate the farms which were planted with such seed, all of which farms were found to be infected. We traced all the seed sold for planting by this mill so far as we were able to get the records. The mill was accidentally burned about this time, but the books were saved, and we have all the recorded sales of seed. The owner of this mill bears the responsibility of having established the pink bollworm in the Beaumont section by sales of seed in violation of his contract with the Government and of his bond. Legal action against him would probably be useless, since I am advised that he is bankrupt.

Mr. DOOLITTLE. Have any actions been brought against him by farmers who have been damaged?

Mr. MARLATT. I have no doubt but that under his bond he could be punished.

Mr. DOOLITTLE. I mean, individual suits for damages by farmers who have purchased seed?

Mr. MARLATT. It is one of those cases where no criminal action probably could be taken.

Mr. DOOLITTLE. Have any of the individual cotton planters who purchased infested seed of this man who was responsible for the spread of the bollworm in this district brought actions for damages against him in any instance?

Mr. MARLATT. Not to my knowledge.

The CHAIRMAN. For the very good reason that he is a bankrupt, I believe you said?

Mr. MARLATT. Yes, sir.

Mr. YOUNG of Texas. I am interested in knowing whether you actually found this bollworm on other farms in this Beaumont vicinity?

Mr. MARLATT. None whatever, except where such seed was sold. Every farm in this region has been examined.

Mr. YOUNG of Texas. But you actually found the worm where he sold the seed?

Mr. MARLATT. Yes, sir.

Mr. RUBEY. There are some 25 red spots in that territory. Do those indicate the spots where you found the worm?

Mr. MARLATT. Yes; each indicates a cotton field in which the worm was found.

The CHAIRMAN. You have, however, cleaned out the worms at these points?

Mr. MARLATT. The cleaning up has probably not been fully completed. The work is now in progress.

Beaumont and Hearne are the only known points in Texas where the insects escaped to fields from mills which had imported Mexican seed. In the case of Beaumont it was not an escape from the mill under natural conditions, but it was a willful sale of seed which led to the distribution of the insect. So, in point of fact, our work in relation to these mills safeguarded the situation fully except in the case of Hearne, and I think that Hearne has now been fully safeguarded by the subsequent cleaning up.

Mr. DOOLITTLE. What is the attitude of that willful mill operator now toward the department?

Mr. MARLATT. He objects to any restriction or any regulation.

Mr. DOOLITTLE. He still objects, does he?

Mr. MARLATT. We have not taken any action against him for the reason that we still had to induce him to do necessary things, and we did not wish unnecessarily to arouse his opposition. For example, his mill burned down shortly after the discovery of the infestations about it, leaving about 50,000 tons of partly burned seed on the ground. This seed was more or less accumulated from this district, and presumably more or less infested. He had made arrangements to ship this seed to a mill in the northern part of Texas in which he was interested. The seed would have passed across the entire cotton belt of Texas. Of course, we wished to prevent that, and as we had no authority to stop it we brought in the State authorities, the governor and the secretary of agriculture of Texas, and such pressure was brought to bear on him that it prevented him from moving this seed to the mill at Lone Oak, Tex., where he had purposed sending it. He was finally induced to send it to Houston for milling and we saw to the transportation and the cleaning of the cars, and made provision for the prompt milling of the seed and the clean-up of the mill.

Mr. YOUNG of Texas. The mill at Houston is really outside of the cotton belt. There is no cotton grown at this place.

Mr. MARLATT. The mill was within the town, and no cotton is grown there.

Mr. YOUNG of Texas. Some legislative action was taken by the State, in cooperation with the Federal Government, in reference to a zone along the border, wasn't there?

Mr. MARLATT. Yes; that relates to the border cotton-free zone, which I wish to take up in a moment.

The other point of infestation in Texas, and the one which is giving us the most concern, is the infestation about Trinity Bay.

The pink bollworm was reported at Anahuac, on the eastern shore of the bay, October 31, and careful inspection now shows infestation extending quite generally around the bay. There is no cotton mill in this region, nor has there been any movement of cotton seed from Mexico to this region. This infestation is of such a character—not sporadic, as at Hearn, but in many cases quite complete—as to indicate that the insect has been there for several years. It becomes a matter of great interest to know how it got there. There are two or three possible explanations. Long before we had a quarantine some planter may have brought in seed from Mexico or, more likely, brought in seed from Egypt for planting. There is a tradition that some man in this region used to grow the longest fibered cotton in Texas. That might indicate Egyptian cotton.

Mr. RUBEX. What region do you mean? "This region" does not mean much. Will you please indicate what region you mean, so that it will appear in the record?

Mr. MARLATT. The Trinity Bay region. That is one theory. Another explanation, and a more plausible one, is that the insect came with some Mexican lint cotton to Galveston. It is reported that there were shipments of Mexican cotton to Galveston, and that in the great storm of 1915 some of this cotton, on the wharves at Galveston, was carried away by the storm of that year and was broken up and scattered widely on the shores of the bay. Much of this cotton was sal-

vaged—all of it that was not broken and some that was broken—but a great deal was not. The lint cotton from Mexico is very poorly ginned, and many seeds are left in the lint. This cotton, coming from Laguna in 1915, may have carried the pink bollworm, inasmuch as this insect got into Mexico in 1911 or 1912, so that by 1915 it was beginning to get a foothold in the Laguna.

The third theory is that Mexican cotton seed was washed away from Galveston by the same storm. Both seed and cotton lint, subsequent to the storm, were found around this bay and carried inland by the waves, sometimes for long distances. This Trinity Bay region has undoubtedly been infested by these or other means for two or three years, which would carry us back to 1915. The infestation here now involves about 5,000 acres of cotton, as determined by a very careful survey.

For the last two months the clean-up of the Trinity Bay region has been proceeding along the same lines as previously employed at Hearne. A force of 1,000 colored laborers are now at work. These have to be transported and fed. It is an expensive proposition to clean up this region. It is now about half completed. We have now about 40 men who are experts and who survey and find the infested fields and direct the labor. The cost of this work is now ranging from \$7,000 to \$10,000 a week. If the growth of cotton in this area can be stopped for two or three years, we believe that the pink bollworm can be stamped out. At least it is worth trying.

Mr. RUBEX. The State of Texas is bearing a portion of this expense?

Mr. MARLATT. The State of Texas is cooperating in the loan of men and to a certain extent in money. They have not much money. Their law carried a small appropriation, only \$10,000, and that was a two-year appropriation. Under the Texas law the governor and the secretary of agriculture can declare a cotton-free area with respect to any area determined to be infested, and at a conference of State and Federal officials and some 1,000 planters, held at Houston on January 2, 1918, it was announced by the secretary of agriculture of Texas that the Hearne, Trinity Bay, and Beaumont regions would be declared cotton-free areas. This determination has been accepted by most of the planters as a necessity and in their interest and in the interest of the State and of the country.

Mr. RUBEX. By "cotton-free area" you mean that they will not grow cotton there for how many years?

Mr. MARLATT. For two or three years; the duration will be subject to later determination. They will not grow any cotton there next year. The opposition to such cotton-free area is fairly strong, but apparently it is chiefly by a small number of men who have land that they are exploiting for sale as cotton land. I think this opposition will be undoubtedly overcome. The majority of the planters of Texas, both about Trinity Bay and at Hearne and Beaumont, have been very willing to cooperate, even to the extent of the loss of their cotton crop.

Mr. RUBEX. They can grow other crops there?

Mr. MARLATT. Yes, sir; probably to better advantage than cotton.

Mr. RUBEX. What other crops can they grow?

Mr. MARLATT. Peanuts, soy beans, corn, rice, and truck crops. Cotton is rather a precarious crop in this region on account of the boll

weevil, and it is only in exceptional years that a good crop is made. There was a good crop last year, and that has given an incentive to plant cotton and caused a real-estate boom in land and is the reason we are having some difficulty now; but if the State stands strongly behind its law we can give the cotton-free-area control a thorough working out with a good chance of success.

The CHAIRMAN. Dr. Marlatt, no appropriation is carried in this bill for the continuance of that work? You have an unexpended appropriation?

Mr. MARLATT. This work is being done under an appropriation of \$250,000, given in an urgent-deficiency bill of the last session. It is available to June 30. The \$50,000 given in the last Agricultural appropriation act is now being used in the border-traffic control work. It carried all the work, both clean-up and border-control, until we got the larger appropriation, but it is now being used in the border control, which is an entirely separate piece of work.

All traffic between Mexico and the United States is now supervised and controlled. Cars and freight from Mexico are more or less contaminated with cotton seed. Cars which have been used for hauling cotton seed usually retain a bushel or more of seed, and the condition of the cars and freight as it comes to the border necessitates an absolute control of all traffic between Mexico and the United States.

We have established along the border, at the main ports of entry, inspectors who see that the cars and freight are cleaned and disinfected, and who control the whole traffic. The traffic is growing all the time, so that now we have to have two or three men at some of the important places—that is, at El Paso, and Laredo. This border-traffic control will call for \$50,000 for its proper maintenance next year. We are spending this year \$40,000 on this work, and the work is undermanned. As the traffic increases we will have to put in additional inspectors. The work is not agreeable nor especially safe, and the cost of living is very high. We have been compelled to pay these men more than we pay other men of the same grade and age to meet the cost of living at these places. This cost is much increased by the fact that these border towns are Army posts and are filled with soldiers and officers. The towns are also full of refugees from Mexico, and all of these conditions increase the cost of living and the cost of the work. The men are also under some danger all the time from "border ruffianism."

We have a fine lot of men engaged in this work, and they are doing it well.

That is the border-traffic control, and it will take \$50,000 to carry it next year.

The CHAIRMAN. You had available for this entire work \$300,000?

Mr. MARLATT. Yes.

The CHAIRMAN. \$50,000 was in one appropriation and \$250,000 in another?

Mr. MARLATT. Yes, sir.

The CHAIRMAN. You say that the \$250,000 will be exhausted in the clean-up work you have ahead of you?

Mr. MARLATT. It will be pretty well exhausted. Whatever is left goes back to the Treasury on the 1st of July.

The CHAIRMAN. What I am getting at is, What provision are you making anywhere for the continuance of this work? You have no appropriation here, unless you take it out of the \$48,300 fund, which you have in the bill, which, I take it, you will use in your other quarantine work.

Mr. MARLATT. An estimate has been drawn for the continuation of the work for the next fiscal year, but it is not included in the printed estimate you have before you, for the reason that the needs of this work are developing so fast that the Secretary felt it would be better to wait until the last moment before adding this particular item to the bill so that it could be added with the fullest knowledge on the subject.

The CHAIRMAN. I was wondering whether you proposed to submit a special estimate for this work, or whether you proposed to handle this proposition as a deficiency?

Mr. MARLATT. It should, in my judgment, be submitted as a supplemental estimate in this bill, and in that case this committee and the department would have a great deal more control of it than it would in an urgent deficiency appropriation.

The CHAIRMAN. Are you prepared to submit that statement now?

Mr. MARLATT. I have a statement which I submitted to the Secretary, giving the items and using language which will cover all the work which we need to do. The Secretary has asked to have this item reserved, as I said, until the last moment, so that it can be presented with any changes that may later become necessary, but still presented in time to be added to this appropriation bill.

The CHAIRMAN. This committee ought to be able to report this bill next week to the House.

Mr. MARLATT. In that case, I should say that this item ought to be presented now.

The CHAIRMAN. I would prefer to have it presented through the regular channel of a supplemental estimate, coming from the department.

Mr. MARLATT. I have here the letter in explanation of the new wording of this appropriation, which I submitted to the Secretary.

Mr. HARRISON. Mr. Marlatt can leave that memorandum with the committee. I would not put it in the record, because it is merely in tentative form now, but it should be kept until the Secretary has given final consideration to the estimate and it comes to the committee in the regular way. That will be done in a very short time now.

Mr. MARLATT. I may say in a general way for the information of the committee that the language for this item as here drafted has been viséed and approved by the solicitor of the department. It calls for a total sum of \$800,000. It includes the border-survey work which I have just discussed, which is now costing at the rate of \$40,000 a year. It includes this clean-up work in Texas, which is of uncertain cost, but for which \$500,000 is asked, which amount, I think, should be available. It includes the cotton-free zone idea, but does not carry any additional appropriation for that, it being intended to include any costs under this item in the Texas work under the estimate of \$500,000. It includes for the clean-up and survey work, to stamp out any local infestation near the American

border in Mexico. \$25,000. It includes \$25,000 for the establishment of an experiment station in the Laguna district of Mexico, already approved by the Secretary, to study the pink bollworm and at the same time to cooperate with the Mexican planters and help them stamp it out in the Laguna.

As a result of our surveys in Mexico and our representations, the Mexican Government has realized the importance of the situation and has quarantined the Laguna itself and taken similar steps to those we are taking in Texas as to quarantine and cotton-free zone ideas. There seems now to be a better chance of exterminating this insect in Mexico—or quite as good a chance—as there is in the United States, because cotton growing in Mexico is in isolated districts, widely separated from each other.

Except for the Laguna, the known infested areas in Mexico are limited to a few farms, so that there is a good possibility of exterminating the insect in Mexico. If this can be accomplished in Texas and Mexico, the pink-bollworm menace may be eliminated for all time or pushed into the distant future. If it is possible to exterminate this insect in Mexico, it is worth doing, because otherwise, in spite of all precautions, the insect will ultimately get across and become established beyond the possibility of eradication.

The CHAIRMAN. Do you know how widespread it is in Mexico?

Mr. MARLATT. Yes. We have fairly accurate knowledge, due to our surveys in Mexico.

The CHAIRMAN. Do those surveys indicate a possibility of exterminating it in Mexico?

Mr. MARLATT. I think so. I think there is a very good prospect of exterminating the insect in Mexico, and it will not call for large expenditures on the part of Mexico or of this Government, because the planters in Mexico who grow cotton are big men, who fully realize the importance of the work. There is not very much miscellaneous, widespread, small growth of cotton. For the most part, it is in the hands of big men who understand the importance of substituting other crops for cotton. The Laguna is one of the largest districts in the world growing cotton almost exclusively. The big planters of this district are willing to give up their cotton growing and the smaller planters may be expected to follow suit. They can grow corn, wheat, peanuts, or soy beans instead, and if they do that, they will have a better chance of stamping out the insect than we have in Texas. I mean the risk is actually greater at this time in Texas than it is in Mexico.

The CHAIRMAN. On account of the fact that more people grow cotton in Texas?

Mr. MARLATT. More people, and cotton growing is more continuous and extended.

The CHAIRMAN. To what extent does the Mexican Government cooperate in a financial way?

Mr. MARLATT. I do not think they are giving much money, but at the suggestion of our agent, who went down to Mexico City and had a thorough canvass of the situation with the Mexican Department of Agriculture and President Carranza, the Government has established a quarantine of the Laguna, prohibiting the movement of cotton or cotton seed from Laguna. That was a big thing for Mexico

and a big thing for us, too. The Mexican Government has also declared a cotton-free area in the one other district in Mexico which was then known to be infested, viz, Allende, about 30 miles from our border, and has issued an order that no cotton shall be grown there for three years, and in all this the planters are cooperating.

The CHAIRMAN. That effective cooperation comes largely from the planters themselves?

Mr. MARLATT. It does, and as a result of the laws or decrees which have been issued by the Mexican Government.

The CHAIRMAN. How much of this \$800,000 that you may estimate for do you propose to spend in the Mexican control work? You say you are going to spend \$500,000 of it in the Texas control and eradication work. For example, how much will this station at Laguna cost?

Mr. MARLATT. Twenty-five thousand dollars is estimated for that.

The CHAIRMAN. That includes the buildings?

Mr. MARLATT. We will probably rent the buildings. It covers the salary of four or five men who will be put in that work, unmarried men for the most part, able to move quickly in case of necessity. The salaries of those men and the other costs of the station will call for \$25,000. I may say, in relation to this station, that the big planters of the Laguna have offered for the use of the station, 10 of them, each 125 acres of land, making some 1,200 acres of land. In connection with this offer the planters agree to plant and cultivate those acres at their own cost but under the direction and for the purposes of our experiments. These people in Mexico have shown an extraordinary willingness to do everything to help in this work. They will give their lands, their time, and their labor to help. The Government has little money to give, but the Government has given us the power and the authority to establish the station, has taken the quarantine action I have mentioned, and has established a free-cotton area for the Allende district, and is considering one for the whole Laguna.

The CHAIRMAN. This worm can spread very rapidly or it may spread very slowly; it may spread as rapidly as a freight train would go with cotton seed in a box car?

Mr. MARLATT. Yes, sir. Of itself it would spread slowly; if it is carried, there is no limit.

The CHAIRMAN. How destructive is it?

Mr. MARLATT. It is probably the most destructive cotton insect we know. Mr. Busck, who was our agent in Mexico, is an expert on the pink bollworm. He has studied it in the Hawaiian Islands and in Mexico. He says that the crop in the Laguna this year was reduced about one-third by this insect. They got the first crop but they did not get the important second crop. At the time he was there, in September and October, field after field exhibited 100 per cent of the bolls infested.

The CHAIRMAN. Is the habit of this worm similar to the habit of the boll weevil, which you are trying to control now by early maturing cotton?

Mr. MARLATT. Very much the same. The cotton that we would get if we had the pink bollworm would be the early cotton.

The CHAIRMAN. What time does it begin to operate in Texas?

Mr. MARLATT. That is not known. One object of this station in the Laguna is to make a biological study of the insect in cooperation with the Bureau of Entomology. We know something about its habits in Honduras, but there bolls and flowers are on the plant at all seasons. In a country like ours, however, and like the Laguna district in Mexico, the yearly history of the insect is very incompletely known. We do not know whether it awaits activity until cotton bolls are formed or whether it goes through a generation or two on the cotton leaves. Its full life history under our conditions should be determined.

The CHAIRMAN. I do not want to repeat, but I would like get it clear in my mind: do you happen to know how large an area in Mexico is infested by this worm?

Mr. MARLATT. The Laguna district is about 50 miles in diameter.

The CHAIRMAN. Is that the only district?

Mr. MARLATT. The Allende district consists of about five or six cotton fields from a few acres up to about 30 acres. Allende is about 30 miles from our border. The only other infested district we know of in Mexico is a large ranch opposite Del Rio, Tex. It was known that this ranch obtained its seed last year from Laguna. We were able to make an inspection of it about three weeks ago and it was found to be infested. These three regions cover the entire known distribution of the insect in Mexico.

The CHAIRMAN. Are these districts the only districts in North America which have this trouble?

Mr. MARLATT. Yes; except the Texas area.

The CHAIRMAN. So that if you can clean up in Texas to begin with and clean up in Mexico, you are in pretty good shape to save the cotton situation from this pest?

Mr. MARLATT. Yes, sir. And I think from what I have said, that you can see that the Mexican situation is not so hopeless as it might seem. These districts are isolated.

The CHAIRMAN. The Mexican situation to me seems to be the critical point of attack here. If you are going to leave this worm in Mexico, it is bound to get into Texas sooner or later.

Mr. MARLATT. We thought in the discussion last year that it was very improbable that we would come to advise any work of general extermination in Mexico, that such work would be impracticable and impossible, or at least would necessarily involve large expenditures, millions of dollars perhaps.

We then thought it would be necessary to buy cotton for destruction and induce the owners not to plant; but we have found the reverse of that to be generally true. The owners seem willing to stop the growth of cotton, willing to accept the loss. What now seems necessary in Mexico is rather a matter of supervision, and perhaps the expense occasionally of clearing up an isolated field. For example, with reference to these fields at Allende, one of the big mills in the Laguna was induced to purchase the seed and take it back into the Laguna to get it out of the way and grind it up. This seed was purchased at a price above the market price, so as to be able to get all of it. They are attempting to do the same thing for all the seed that is grown in the Matamoros district, simply to get that seed out of the way and into the Laguna to grind it up.

The CHAIRMAN. Let me ask you a few more questions, and then I will be through. This is a large appropriation you are asking for, and I want to get all the facts about it that I can. Are these planters in the Laguna district American planters or are they native Mexicans?

Mr. MARLATT. They represent all nationalities. One of the largest companies, having the largest tract there—25,000 to 30,000 acres—is headed by James Brown Potter, who has a large interest in it. He is a New Yorker. The Purcell ranch sounds like an American name, and it is one of the large ranches. Some of the holdings are German and some English. One of the largest owners is a Mexican, so that the land, I should say, is held about half by English and Americans and half by Mexicans.

The CHAIRMAN. The point I am driving at in this line of questions is to ascertain whether or not these men are the type of men with whom you are sure you can always get close cooperation.

Mr. MARLATT. They are very high-grade men. We have met all the owners of the larger tracts. Two or three of them have been in Washington and they seem to be very high-grade men, thoroughly impressed with the situation, and willing to go to any cost and to cooperate in the fullest measure with this Government and the Mexican Government.

The CHAIRMAN. One other question: I have not read the item in the deficiency bill, but are you permitted to pay to the farmers whose fields you destroy any damages in that district?

Mr. MARLATT. We are given that authority in that bill. In point of fact, so far we have spent no money in that way, and no such expenditures have been necessary.

The CHAIRMAN. But you have the power?

Mr. MARLATT. We have the power.

The CHAIRMAN. Do you think that you should have that power? Do you think that you should pay for these destroyed fields?

Mr. MARLATT. We should have that power; yes. But it is distinctly understood that we do not propose to exercise it except in the case of urgent necessity. There may be an occasion when the purchase of a mass of seed in the hands of a farmer and the removal of that seed to Laguna, where we resell it to the mills, will be necessary. There may be a little loss on that amount of seed, but there should be power to make the work that is undertaken efficient by having the authority to clean up any points, small or trivial, which would otherwise be neglected.

The CHAIRMAN. Are there any further questions, gentlemen? If not, have you any further statement to make, Dr. Marlatt?

Mr. YOUNG of Texas. I would like to ask about the Hearne field that was destroyed. As I recall it, that was burned while the crop was maturing. Was the owner paid for that crop?

Mr. MARLATT. There was a subscription; the public-spirited citizens of Hearne raised a considerable sum of money that paid for the cotton destroyed or most of it. The Government paid for no destroyed cotton.

Mr. YOUNG of Texas. That was my understanding. It was paid for by the people who were interested?

Mr. MARLATT. Exactly. That was part of the cooperation at that point.

Mr. HAUGEN. You propose to spend \$300,000 in Mexico to eradicate that worm?

Mr. MARLATT. We hope not to expend anything except on our station in the Laguna and in the survey work and in general supervision and aid in the clean-up. We hope to expend practically nothing in the purchase of cotton for destruction. These two items total \$50,000. The additional \$200,000 is an emergency fund for such clean-up work in Mexico as we are now doing in Texas.

Mr. HAUGEN. What is the purpose of going into Mexico with your station? Is it an experiment station to be conducted along this line?

Mr. MARLATT. It is very desirable to get full knowledge of this insect. We do not want to get it in this country, and can not. We can get it in the Laguna district where the insect now occurs. The object is to study the insect, study means of controlling it, and to have headquarters there to aid the Mexican planters in their clean-up work, which is being done in the interest of Mexico and even more in the interest of the United States.

Mr. HAUGEN. The object is to educate the Mexicans?

Mr. MARLATT. Yes, in part. It is to educate and help the Mexicans in their clean-up work.

Mr. HAUGEN. It seems to me to be a dangerous project to establish. We have our hands full in taking care of our own burdens.

Mr. MARLATT. It is a case where we do not want to bring the insect to this country to study it here.

Mr. HAUGEN. Well, we might go to Egypt and find a bug there and we might find it necessary to establish a station there. It is just a question as to how far you are going to carry the plan of which this is a beginning.

Mr. MARLATT. The Government has established precedents along that line many times. This would not be a new precedent.

Mr. HAUGEN. In what instance?

Mr. MARLATT. In the study of corn diseases, for example. in the Orient which is now being made.

Mr. HAUGEN. We have sent special men. We have never established a station.

Mr. MARLATT. "Station" is perhaps a large word to use. In point of fact, what we are doing is to put some experts into the Laguna to study the insect and its control and to help in the substitution of other crops for cotton. The "station" amounts merely to the housing of these men.

Mr. HAUGEN. We have never gone into foreign countries and destroyed their crops and paid for them, which this proposes to do here, or to buy seed and destroy it. It is quite a different thing from sending people into other countries to investigate.

The CHAIRMAN. Let us make that plain. Do you propose in your Mexican work to buy seed and cotton and destroy it or not?

Mr. MARLATT. Not in general. I endeavored to make myself clear on that, that we want authority—

Mr. HAUGEN (interposing). In that connection I understood him to say that they want that authority; that they would not abuse the authority, but they should avail themselves of it.

Mr. MARLATT. For example, in the Allende district there may be six infested ranches, and we might find in the clean-up there that

there is a ton of seed which has been left. It ought to be burned up, and it would cost us \$25 perhaps in Mexico to get that seed and burn it up. I think we ought to burn it up rather than leave it. There may be such incidental cases where a little money should be spent to complete a work which otherwise would be incomplete and useless. But, in the main, the fund is to be used, if necessary, in just such clean-up work as we are now conducting in Texas; in other words, to assist in eradicating the insect in Mexico.

Mr. HAUGEN. It seems to me that we have our hands full in taking care of our own affairs without mixing in with others and taking care of theirs.

Mr. MARLATT. They are our neighbors.

Mr. HAUGEN. They are our neighbors, and that is possibly an excuse for going in there; but, after all, that is a dangerous precedent to establish. I do not know where it is going to stop.

Mr. RUBEY. The whole object of this is to protect the American cotton growers, and I understand we are going down there as the best method of protecting our own people against the bringing in of this pest. Is that the idea?

Mr. MARLATT. That is the idea.

Mr. RUBEY. And the probabilities are that you would not spend over \$50,000 at the utmost down in Mexico and only \$25,000 on this station?

Mr. MARLATT. We are planning actually to spend only \$25,000; that is, on the research station. We are asking also for \$25,000 for survey and clean-up work near the border in Mexico. This may not all be needed. We are asking for \$200,000 as an emergency fund, which may be available, if necessary, for cooperation in such general work of extermination in Mexico as we are now conducting in Texas.

Mr. HAUGEN. Well, Mr. Chairman, if we embark on this extensive plan, I do not doubt that somebody will contend that it is necessary to go to the remotest part of the world to protect the American people against some bug that may be found there.

The CHAIRMAN. If there is nothing further, Dr. Marlatt, we are much obliged to you.

PRINCIPAL ACTIVITIES OF FEDERAL HORTICULTURAL BOARD.

Appropriations and activities.	Allotment (surplus fund).	
	1918	1919
ENFORCEMENT OF PLANT-QUARANTINE ACT.....	\$54,500	\$48,300
<i>Control of entry of plants and plant products under regulation.....</i>	43,600	37,400
The entry of the following plants and plant products is now regulated with respect to particular plant diseases and insect pests which it is desirable to exclude from the United States: Nursery stock, potatoes, avocados, cotton, corn, cotton-seed products, and oranges. Other plants and plant products are brought under similar restrictions from time to time as the need arises. The entry of such plants and plant products is safeguarded by regulations requiring inspection and certification as to freedom from plant diseases or insect pests and by reinspection and, if necessary, fumigation or disinfection at the entry ports or at destination. Full control of the entry of such products is further obtained by a system of entry under permit.		
<i>Foreign plant quarantines.....</i>	3,000	3,000
Quarantines to prevent, under existing quarantines, the entry of plant material affected with white-pine blister rust, potato wart, Mexican fruit fly, avocado weevil, the pink bollworm of cotton, European pine-shoot moth, citrus canker		

PRINCIPAL ACTIVITIES OF FEDERAL HORTICULTURAL BOARD—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
ENFORCEMENT OF PLANT-QUARANTINE ACT—Continued. and other citrus diseases, <i>Sclerospora maydis</i> and other diseases of Indian corn and certain closely related plants, insect enemies and plant diseases of sugar cane, and insect pests of sweet potatoes and yams; and to provide for like control by quarantine of any new danger that may arise.		
<i>Domestic plant quarantines</i> Quarantines to prevent the further distribution within the United States of the Mediterranean fruit fly and melon fly, the gipsy moth and brown-tail moth, date-palm scale insects, the pink bollworm of cotton, insect enemies and plant diseases of sugar cane, and insect enemies of sweet potatoes and yams; and by future quarantine to control any new pests that may appear.	\$5,000	\$5,000
<i>Plant-quarantine investigations</i> Investigation of insect and plant-disease conditions as a basis for needed quarantine action. When it is brought to the attention of the Federal Horticultural Board that a dangerous plant pest, liable to be imported into the United States, occurs in some foreign country or has already obtained a limited foothold in the United States, if the additional information needed before intelligent quarantine action can be taken can not be promptly furnished by the bureau of the department concerned, qualified experts are detailed to make the necessary studies and investigations.	2,900	2,900
PREVENTING THE ENTRY AND ESTABLISHMENT OF THE PINK BOLLWORM OF COTTON.... It is proposed to undertake under this project all the means necessary to prevent the establishment of the pink bollworm in Texas or other States, including the regulation of the entry into the United States of railway cars and other vehicles, and freight, express, baggage, and other materials from Mexico, to prevent the accidental entrance with such cars or freight of the pink bollworm through the agency of cotton seed or otherwise; to conduct surveys in Texas and other States to detect any instances of infestation by this insect, and to carry out such control measures as may be necessary to stamp out such investigations; to establish such zone or zones free from cotton culture near the border of any State adjacent to Mexico as may be necessary to prevent the natural migration of the insect; to make surveys to determine the actual distribution of the pink bollworm in Mexico and to exterminate local infestations in Mexico near the border of the United States, in cooperation with the Mexican Government or local Mexican authorities; to make a technical study of the pink bollworm in Mexico as a basis for control measures and to cooperate with the Mexican Government or otherwise in undertaking such measures for the extermination of the pink bollworm of cotton in Mexico as shall be deemed practicable and expedient.	300,000	¹ 800,000

¹ Appropriation suggested for inclusion under "Miscellaneous" section of the agricultural appropriation bill for the fiscal year 1919.

STATEMENT RELATIVE TO QUARANTINE AND OTHER RESTRICTIVE ORDERS NOW IN FORCE UNDER THE PLANT-QUARANTINE ACT.

Under the plant-quarantine act there are now in force 11 foreign quarantines, 8 domestic quarantines, and 8 orders regulating the entry from foreign countries of certain plants and plant products. Of these quarantines and orders regulating entry 9 are new or have been revised and reissued during the year. A brief description of the current quarantine and other restrictive orders is given below.

The numbers assigned to these quarantines indicate merely the chronological order of issuance of both domestic and foreign quarantines in one numerical series. The quarantine numbers missing in this list are quarantines which have either been superseded or revoked. For convenience of reference these quarantines are here classified as domestic and foreign.

DOMESTIC QUARANTINES.

Date palms.—Quarantine No. 6, with regulations: Prohibits the interstate movement of date palms or date-palm offshoots from Riverside County, Cal., east of San Bernardino meridian; Imperial County, Cal.; Yuma, Maricopa, and Pinal Counties, Ariz.; and Webb County, Tex.; except in accordance with the

rules and regulations prescribed in the Notice of Quarantine, on account of two injurious scale insects, to wit, the Parlatoria scale (*Parlatoria blanchardi*) and the Phoenicococcus scale (*Phoenicococcus marlatti*).

Cotton seed and cottonseed hulls.—Quarantine No. 9: Prohibits the importation of cotton seed and cottonseed hulls from the Territory of Hawaii on account of the pink bollworm.

Hawaiian fruits.—Quarantine No. 13, revised, with regulations: Prohibits the importation from Hawaii of all fruits and vegetables, in the natural or raw state, except in manner or method or under conditions prescribed in the regulations of the Secretary of Agriculture, on account of the Mediterranean fruit fly and the melon fly.

Sugar cane.—Quarantine No. 16: Prohibits the importation from Hawaii and Porto Rico of living canes of sugar cane, or cuttings or parts thereof, on account of certain injurious insects and fungus diseases of the sugar cane known to occur in these Territories.

Cotton.—Quarantine No. 23, revised, with regulations: Prohibits the movement of cotton from Hawaii to the continental United States, except in accordance with the regulations prescribed in the Notice of Quarantine, on account of the pink bollworm.

Five-leaved pines, Ribes, and Grossularia.—Quarantine No. 26: Prohibits the interstate movement of five-leaved pines, currant and gooseberry plants for all States east of and including the States of Minnesota, Iowa, Missouri, Arkansas, and Louisiana to points outside of this area; prohibits, further, the interstate movement of five-leaved pines and black-currant plants to points outside the area comprising the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York.

Gipsy moth and brown-tail moth.—Quarantine No. 27 with regulations: Prohibits the movement interstate to any point outside of the quarantined towns and territory, or from points in the generally infested area to points in the lightly infested area of stone or quarry products and of the plants and the plant products listed therein until such stone or quarry products and plants and plant products have been inspected by the United States Department of Agriculture and certified to be free from the gipsy moth or the brown-tail moth, or both, as the case may be. This quarantine covers portions of the New England States.

Sweet potatoes and yams.—Quarantine No. 30: Prohibits the movement from Hawaii and Porto Rico into or through any other Territory, State, or District of the United States of all varieties of sweet potatoes and yams on account of the sweet-potato weevil and the sweet-potato scarabee.

FOREIGN QUARANTINES.

Irish potato.—Quarantine No. 3: Prohibits the importation of the common or Irish potato from Newfoundland; the islands of St. Pierre and Miquelon; Great Britain, including England, Scotland, Wales, and Ireland; Germany; and Austria-Hungary on account of the disease known as potato wart.

Mexican fruits.—Quarantine No. 5, as amended: Prohibits the importation of oranges, sweet limes, grapefruit, mangoes, achras sapotes, peaches, guavas, and plums from the Republic of Mexico, on account of the Mexican fruit fly.

Five-leaved pines, Ribes, and Grossularia.—Quarantine No. 7, as amended: Prohibits the importation from each and every country of Europe and Asia and from the Dominion of Canada and Newfoundland of all five-leaved pines and all species and varieties of the genera *Ribes* and *Grossularia*, on account of the white-pine blister rust.

Cotton seed and cottonseed hulls.—Quarantine No. 8, as amended, with regulations: Prohibits the importation from any foreign locality and country, excepting only the locality of the Imperial Valley, in the State of Lower California, Mexico, of cotton seed (including seed cotton) of all species and varieties and cottonseed hulls, on account of the pink bollworm.

Seeds of avocado or alligator pear.—Quarantine No. 12: Prohibits the importation from Mexico and the countries of Central America of the seeds of the avocado or alligator pear on account of the avocado weevil.

Sugar cane.—Quarantine No. 15: Prohibits the importation from all foreign countries of living canes of sugar cane, or cuttings or parts thereof, on account of certain injurious insects and fungus diseases of the sugar cane occurring in such countries. There are no restrictions on the entry of such materials into Hawaii and Porto Rico.

Cotton.—The order of April 27, 1915, prohibits the importation of cotton from all foreign countries and localities, except under permit and in accordance with the other provisions of the regulations issued under said order, on account of injurious insects, including the pink bollworm. These regulations apply in part to cotton grown in and imported from the Imperial Valley, in the State of Lower California, in Mexico.

Corn.—The order of March 1, 1917 (Amendment No. 1, with Regulations, to Notice of Quarantine No. 24), prohibits the importation of Indian corn or maize in the raw or unmanufactured state from the countries and localities listed in Notice of Quarantine No. 24, except under permit and in accordance with the other provisions of the regulations issued under said order, on account of injurious diseases of Indian corn.

Cottonseed products.—The order of June 23, 1917, prohibits the importation of cottonseed cake, meal, and all other cottonseed products, except oil, from all foreign countries, and a second order of June 23, 1917, prohibits the importation of cottonseed oil from Mexico, except under permit and in accordance with the other provisions of the regulations issued under said orders, on account of injurious insects, including the pink bollworm.

Citrus fruits.—The order of June 27, 1917 (Notice of Quarantine No. 28, with Regulations), prohibits the importation from the countries and localities listed therein of all species and varieties of citrus fruits, excepting only oranges of the mandarin class (including satsuma and tangerine varieties), on account of the citrus canker disease. Oranges of the mandarin class (including satsuma and tangerine varieties) may be imported under permit and in accordance with the other provisions of the regulations issued under said order.

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SEVENTH CONGRESS

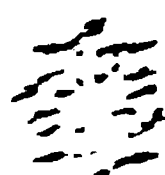
SECOND SESSION

IN THE

SENATE

1859

WASHINGTON



AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Saturday, January 5, 1918.

AFTER RECESS.

The committee reassembled, pursuant to taking a recess, at 2 o'clock p. m.

FOREST SERVICE.

STATEMENT OF MR. ALBERT F. POTTER, ASSOCIATE FORESTER, FOREST SERVICE, U. S. DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Gentlemen of the committee, Dr. Potter will present the estimates for the Forest Service this afternoon. Dr. Graves, as I understand it, is in France.

Mr. POTTER. Mr. Chairman, as you probably know, early in June, at the request of the War Department, Mr. Graves went to France to look into the timber situation there and to help in making plans for the activities of the Tenth Regiment of Forest Engineers, which was being organized here at the request of the British commission to go over there to get out timbers needed in the war.

The main reason for getting timber out over there is to save tonnage in the transportation that otherwise would be necessary in sending timber from here. Mr. Graves found that there was a considerable amount of timber available, enough to meet the present war needs there, and, following his first preliminary work, a request was received from Gen. Pershing for the organization of a second forest regiment. The Tenth included two battalions of 600 men each. The second regiment is known as the Twentieth Regiment of Forest Engineers and will be composed of 10 battalions of 750 men each. Six of these battalions are now recruited and ready for service and the other four battalions will be organized as rapidly as possible.

This entire organization will be engaged in cutting the timbers in France that are needed in trench construction, railroad building, road building, for telephone poles, and for the construction of cantonments, Y. M. C. A. buildings, warehouses for supplies, and all the other uses the Army has for lumber.

Mr. LESHER. In recruiting these battalions, do they take in any special class of men?

Mr. POTTER. Yes, sir. They have taken almost entirely men who have had experience in woods work, and we have cooperated with

the War Department in the recruiting of these regiments by recommending men with the proper qualifications. Where our supervisors have known young men called in the draft who have had experience in woods work they have informed us and we have given the War Department the names of those men, so that they might be put into these forest regiments. In that way we have been able to render great assistance to the War Department. From our own organization some 240 men have gone into the military work, either in the forest regiments or in connection with the other war activities, such as the airplane work or the ordnance work.

In general, we have curtailed all of our work which did not have a direct bearing upon the winning of the war and have concentrated on those things which must be done. On the national forests, of course, the work has been, first, protection of the forests from fire and depredations and, second, meeting the current needs of the people in connection with the timber supply and in the use of the grazing resources.

The work at the Madison laboratory has been almost entirely on war problems, such as kiln-drying processes and strength tests on woods used in airplane construction, packing-box tests for the Ordnance Bureau, and other things of that kind.

The past fiscal year has been a prosperous one for the Forest Service, from a financial standpoint. The receipts reached a total of \$3,457,000, which is an increase of \$633,000 over the previous fiscal year. This increase was \$265,000 from the timber, \$339,000 from the grazing, and about \$29,000 from other miscellaneous uses. The total cost of administration, except for fire fighting, was about the same as the previous year.

The CHAIRMAN. How much, Doctor?

Mr. POTTER. The total cost of administration normally is about \$4,000,000. Owing to the severe drouth, however, we had a very serious fire situation this last year. The weather conditions were worse than in 1910, when we suffered such severe losses. This necessitated incurring a deficiency, which amounted to \$775,000. A full report, of course, will be furnished to the Appropriations Committee in connection with estimates for the deficiency. I would like, however, to say just a few words more about it at this time. The total number of fires in 1917 was 6,144, as compared with 5,201 in 1910. We had more fires, but the total area burned over in 1917 was only 740,000 acres, as against 4,136,000 acres in 1910. The property damage from the fires in 1917 is estimated at \$763,000, and the property damage in 1910 was about \$25,000,000. So that, although we have had a heavy expense, by our more effective and efficient organization, we have been able to keep the fires from getting beyond control and have succeeded in preventing serious loss of Government property. While the expenditure this year is greatly regretted, we feel that it is well justified by the results we were able to secure in effective control and prevention of loss. I might say, further, that, so far as we know, there has not been a single life lost this past season from the forest fires in the national forests, whereas in 1910 we lost some 80 men.

The CHAIRMAN. What is the total acreage now in the national forests?

Mr. POTTER. The total area of Government land is about 155,000,000 acres. In the estimates this year an increase of \$35,820 has been made in the statutory roll, but this has been met entirely by like reductions in the miscellaneous rolls, so that there is no actual increase.

In the lump-sum items we are asking for an increase of \$30,000 for survey of timber and grazing resources, mainly to meet war needs, because we have a decidedly increased demand for both timber and grazing, and we are also asking for an increase of \$20,000 for work in the Forest Products Laboratory.

We are making decreases of \$10,000 in the item for survey and platting of lands and \$20,000 in the item for purchase of tree seeds, so that the net increase is only \$20,000.

On account of the labor troubles in the Northwest last summer there was a serious curtailment of our timber-sale receipts in the early part of the fiscal year, particularly in Montana. This was due to the strikes in the mills. The increase in business in California has fully made that up, however, so that at present our receipts this year are equal to the timber-sale receipts last year at this time. Now that the strikers are back at work, the cutting under existing contracts will go ahead in the Northwest again, and I feel pretty sure that by the end of the fiscal year we will have an increase of at least \$150,000 over the 1917 timber-sale receipts, which were a \$265,000 increase over the previous year.

The CHAIRMAN. In connection with your timber receipts, how does the price of timber this year compare with that last year?

Mr. POTTER. The stumpage price has not changed very much, Mr. Chairman. The increased price of lumber has been mainly on account of the increased cost of production and has not as yet affected stumpage prices very much, so that they remain about the same.

In the Northwest, Douglas fir prices ranged from \$1.20 to \$1.75 per thousand, with one sale of relatively inaccessible timber of moderate quality at 75 cents per thousand in a locality where logging is difficult. A 330,000,000-foot sale on the Oregon Forest was at \$1.20 per thousand for Douglas fir and red cedar and 50 cents per thousand for hemlock and silver fir.

Spruce normally brings from \$1 to \$2.50 per thousand, only the very finest and most accessible bodies bringing a higher price. Sales of selected trees for airplane stock have been made as high as \$4.60 per thousand. More accessible supplies on private lands bring even higher prices in the present emergency.

Yellow pine in eastern Oregon and California brings from \$2 to \$3.50 per thousand, depending on quality and accessibility. Sales on the Whitman Forest, for example, have been made at about \$3. A recent sale on the Lassen Forest in California was at \$3 for the more accessible timber and \$2.50 for the less accessible.

The north Idaho-western Montana region has a wide range of prices, depending on the species involved. White pine brings from \$3 to over \$5 per thousand, while hemlock and white fir can not normally be sold at more than 50 cents. The average for all species involved in our sales in this region would be between \$2 and \$3.

In Arkansas sales of pine in 1917 were at from \$2.50 to \$3.25 per thousand and oak at from \$3 to \$6 per thousand.

On the eastern purchase areas small amounts of the better species, such as poplar, basswood, and ash, have sold at from \$5 to \$10 per thousand. Other species, such as oaks, chestnut, etc., bring from \$2 to \$4 per thousand. Chestnut acidwood brings from 25 cents to \$1 per cord.

The same situation exists with reference to the prices charged for the use of grazing land. While salaries and cost of supplies have increased, the rental value of land has not changed very much. Land rentals are about the same as they were before.

Owing to the adverse conditions which stockmen have had to face during the last year, the past winter having been a very severe one on the stock industry, causing them to suffer severe losses and to have a short lamb and calf crop, and on account of the difficulties which have confronted them in the transportation and marketing of their stock, the Secretary of Agriculture felt that it was inadvisable to make any further increase in the grazing fees at present. This means a postponement of the further increases which we had proposed to make, but the Secretary felt that, in view of the importance of encouraging in every way the increased production of meat, it was best not to increase the burdens of the stockmen at this time.

This means that our increase from grazing this year will be confined to the fees on the additional number of stock for which we are able to provide range, and this will probably amount to something like \$50,000; so that we do not feel that we are justified in promising more than a \$200,000 increase in receipts this year.

Mr. HUTCHINSON. Have the grazing lands deteriorated?

Mr. POTTER. No, sir. Under our system of management the grazing lands in the national forests are gradually improving all the time, and every year we are able to take care of a few more stock. This last year, through the use of the money that was appropriated—a special appropriation having been made for grazing improvements—we have been able to take care of 200,000 more cattle and 200,000 more sheep on the forests. With a continuation of this work, we will be able to make still further increases during the coming year.

In general, we have found that every dollar spent in range improvements has meant the grazing of an additional cow on the range.

Mr. HUTCHINSON. You say in the way of improvements; what do you mean by that?

Mr. POTTER. In the way of fences, bridges, water development, and things of that kind.

Now, Mr. Chairman, in reference to the separate items in the Forest Service section of the estimates, I will first refer to item No. 9.

The CHAIRMAN. Let me first ask you a general question about the transfers. I see that you have a number of transfers from your lump-sum funds to the statutory roll. Those have been at the same salaries in all cases, have they?

Mr. POTTER. Yes; at the same salary in each case.

The CHAIRMAN. Have you any increases in the number of the positions in the statutory roll?

Mr. POTTER. No, sir.

The CHAIRMAN. All the increases have been by way of transfers?

Mr. POTTER. Yes, sir; all the increases have been by transfers.

The CHAIRMAN. Suppose you explain item 21:

Six hundred and thirty forest rangers, at \$1,100 each (a decrease of 20 by change to forest guards, at same salary; 10 changes to 20 for six months' periods and 10 changes to 40 for three months' periods), \$693,000.

Mr. POTTER. In item 21 we are asking that the number of year-long rangers be decreased by 20, and that 10 be changed to 20 for a six months' period and 10 changed to 40 for a three months' period. We find in the work on the forests that the greatest need for men, or, rather, the need for the largest number of men, is in the middle of the summer season. During a period of about three months—July, August, and September—is when we need the big fire-fighting force, and we have learned from our experience this year that on those forests where we put men on in advance of the fires, but when the weather conditions indicated that there was extreme danger, we have had the smallest losses.

This shows that it paid well to increase the summer force. In order that we may follow this plan and increase the force materially during those months of greatest danger and also take care of the increased demands in summer work, we would like to change 20 of the \$1,100 forest rangers from year-long to short-term men, so that they may be employed in that way. The total amount expended would be the same. It would simply mean that we could employ 20 men for a six month's period and 40 men for a three months' period, in place of 20 men for the entire year.

The CHAIRMAN. That seems to be a sensible proposition.

Mr. RUBEN. Do you have any trouble in getting men?

Mr. POTTER. We have serious trouble in getting them now because of the great demand for men in every way.

Mr. RUBEN. You have more trouble in getting men for the short period than for the long periods, I suppose?

Mr. POTTER. No, not so much trouble that way, because this work seems to fit in very well with other activities, particularly in the timbered sections. In California, where the harvest season is in the middle of the summer, there is some difficulty in getting short-term men because they are needed in the harvest fields. But in the Northwest, in the more heavily timbered country, where the men are working on logging operations in the winter and spring and there is not such great demand for labor in the summer months, we have no difficulty in getting the short-term men.

The CHAIRMAN. Your other changes, down to item 65 on page 80, you have explained as being either transfers or to be taken in connection with item 21. Item 25 seems to involve a change of title. It is "one lithographer or photographer (by change of title from lithographer, \$1,200)."

Mr. POTTER. Yes, sir; that is suggested so that we may use the salary for either a lithographer or photographer.

The CHAIRMAN. It makes it a little more elastic?

Mr. POTTER. Yes, sir; that is the only reason for the change.

The CHAIRMAN. Is there any other change in the statutory roll except by way of transfers?

Mr. POTTER. No, sir; there is no change except just the transfers from the miscellaneous rolls.

The CHAIRMAN. Your first general expense item is item 99, on page 83:

For salaries and field and station expenses, including the maintenance of nurseries, collecting seed, and planting necessary for the use, maintenance, improvement and protection of the national forests named below.

I notice in looking over the appropriation for the various individual forests that certain small changes in the appropriations have been made. Suppose you give the committee, briefly, just why they should occur.

Mr. POTTER. Beginning with the Chugach National Forest, item No. 123, the amount provided last year, \$10,938, is changed to \$7,938, a decrease of \$3,000. Of this decrease, \$1,500 is on account of the transfer to the statutory roll of one forest ranger at \$1,500, and the additional decrease of \$1,500 is made possible through the reduction of station and field expenses, due to an elimination of a considerable area from the forest that was made last year.

In item 127, for the Coconino National Forest, the change is the other way; it is increased from \$12,107 to \$16,368, an increase of \$4,261.

This increase is needed on account of the expected large increase in timber-sale business. In the fiscal year 1917 the receipts from timber sales increased \$40,000 over those of the year previous, and a further increase is expected in the year 1919.

An increase in the appropriation of \$4,261 will provide for three scalers at \$1,000 each for the entire year and one scaler at \$1,000 for six months, in addition to incidental expenses, which we figured at \$761. That is to take care of the actual increased timber business.

In item 128, for the Coeur d'Alene National Forest, there is an apparent decrease of \$2,400, but this is due entirely to transfers from the miscellaneous to the statutory roll.

In item No. 146, for the Fremont National Forest, there is a decrease of \$1,200. This decrease is made because we found it possible to administer the forest without a forest assistant at a salary of \$1,200 who was employed there before.

In general, unless you care to go through all of the items forest by forest, the changes are made for reasons of that kind, either on account of change in the area of the forests by elimination, increases to take care of the increased business, or decreases that are made possible through curtailment of activities or by transfer to the lump-sum roll, and I have here a complete statement in reference to each. All increases are offset by reductions on other forests, so the total is the same as last year. The changes are all shown in a tabulation on page 84 of the estimates.

The CHAIRMAN. I wish you would insert that in the record at this point, and unless members of the committee would like to ask particularly about some of these matters, we will go on to the next item.

(The statement referred to is as follows:)

Item No. 157—Jefferson National Forest.—The amount now provided for the Jefferson National Forest, \$5,964, is changed to \$5,064, a decrease of \$900 on account of the transfer to the statutory roll of one clerk at \$900.

Item No. 167—Lincoln National Forest.—The amount now provided for the Lincoln National Forest, \$8,067, is changed to \$9,984, an increase of \$1,917. This increase is needed on account of the large advance in timber-sale activities on the forest. The receipts from timber sales in the fiscal year 1917 more than

tripled those of the previous year, and a further increase is expected. The increase in the appropriation is to provide for one forest examiner at \$1,400, and incidental expenses on account of expected increase in timber-sale business, \$517.

Item No. 169—Luquillo National Forest.—The amount now provided for the Luquillo National Forest, \$2,500, is changed to \$1,700. This is an apparent decrease of \$800 but an actual increase of \$1,200, owing to the transfer to the statutory roll of one forest supervisor at \$2,000. This forest is located in Porto Rico and has heretofore been under only partial administration, owing to the need of a large amount of preliminary work, necessitating careful survey of the forest boundary and adjoining the interior private holdings and the adjudication of many private land claims. This preliminary work has now been accomplished and it is planned to place the forest under more active administration, which action has been urgently requested by the Governor and other officials of Porto Rico. The actual increase of \$1,200 is to provide for two forest guards for eight months of the year at a salary of \$75 per month.

Item No. 171—Malheur National Forest.—The amount now provided for the Malheur National Forest, \$7,591, is changed to \$6,091, a decrease of \$1,500. This decrease is due to the fact that during the fiscal year 1919 it is expected that a forest assistant will not be needed, and it has also been found possible to bring about a slight reduction in protection costs.

Item No. 173—Manzano National Forest.—The amount now provided for the Manzano National Forest, \$4,230, is changed to \$5,800, an increase of \$1,630. The timber-sale business on the Manzano National Forest is increasing very rapidly, the amount of timber sold during the fiscal year 1917 having advanced by approximately 36,000,000 feet b. m. over the previous year. This increase is expected to continue, and to efficiently handle the timber-sale work on this forest it is necessary to provide for a forest examiner at \$1,400, and for other expenses incidental to the expected increase in timber-sale work, \$230.

Item No. 182—Monterey National Forest.—The amount now provided for the Monterey National Forest, \$4,547, is changed to \$3,547, a decrease of \$1,000. This decrease is possible on account of the elimination of the small San Benito division of this forest, thus causing a reduction in administration expenses.

Item No. 184—Nebraska National Forest.—The total for the Nebraska National Forest is \$6,165, a reduction of \$1,200. This reduction is possible as the purchase of land now under lease and used as a nursery site on the Niobrara division of the forest will be accomplished during the fiscal year 1918. However, this decrease is offset by corresponding increases in other national forest subappropriations where additional funds are necessary to carry on increased business. The provision for the acquisition by purchase or condemnation of lands in Nebraska, which may be deemed necessary and suitable for nursery sites, is omitted, as it is expected that the lands in question can be acquired during the fiscal year 1918. The provision establishing a maximum building limitation of \$1,000 should be continued so that adequate buildings can be erected at the nurseries when necessary as, owing to the present high cost of labor and material, it is impossible to construct suitable buildings under the general building limitation of \$650, which was established in the fiscal year 1912. Commercial conditions existing at present make it entirely impracticable to even consider building construction at the nurseries within this limitation. Market prices on practically all commodities entering into construction work have greatly increased; especially is this true in regard to hardware, paint, and lumber, which have increased from 50 to 200 per cent in the last two years. The cost of labor has also materially advanced. Experts in the Office of Public Roads and Rural Engineering were requested to furnish plans and specifications for a three or four room house to be built of \$650. They stated positively that it could not be done as a minimum. For these reasons the provision allowing for the construction of buildings at the nurseries on the Forest should be continued.

Item No. 185—Nevada National Forest.—The amount for Nevada National Forest, \$2,277, is changed to \$2,249. The increase of \$28, but is an actual increase of \$1,172 on account of the statutory roll of one clerk at \$1,200. In 1917 this was \$3,244, and a decrease of \$967 was made in 1918 as it was such a saving could be made by a readjustment of the fee that this is a miscalculation and the reduction should be

This forest is 1,260,800 acres in extent. The headquarters are at the mining city of Ely, and it is found that, largely on account of the increase in station and traveling expenses, the increase being exceptionally high in Nevada, it is now necessary to request an increase to effectively carry on the necessary work of this forest. The additional amount requested will provide \$735 for station expenses, such as rent, heat, light, freight, expressage, drayage, telephone, etc., and \$1,514 for traveling expenses, forage, and miscellaneous expenses.

Item No. 192—Payette National Forest.—The amount now provided for the Payette National Forest, \$10,537, is changed to \$8,537, a decrease of \$2,000. This decrease is made possible through a readjustment of the field force due to increased efficiency in organization and management which eliminates unnecessary expenses without curtailing the fire protection or interfering with the transaction of current business on the forest.

Item No. 195—Plumas National Forest.—The amount now provided for the Plumas National Forest, \$20,594, is changed to \$19,803, a decrease of \$791. This decrease is due to a reduction in the short-term protective force employed during the fire season caused by an extension of the cooperation between the force employed by the Forest Service and that furnished by owners of private lands within or adjacent to this forest.

Item No. 202—Salmon National Forest.—The amount now provided for the Salmon National Forest, \$6,577, is changed to \$5,377, a decrease of \$1,200, on account of the transfer to the statutory roll of one clerk at \$1,200.

Item No. 210—Sequoia National Forest.—The amount now provided for the Sequoia National Forest, \$16,346, is changed to \$13,744, a decrease of \$2,602. This decrease can be accomplished on account of a readjustment of the field force resulting in a decrease of expenses for field administration.

Item No. 221—Stanislaus National Forest.—The amount now provided for the Stanislaus National Forest, \$16,922, is changed to \$14,697, a decrease of \$2,225. This decrease is due in part to a readjustment in the field force, a slight prospective decrease in the volume of business to be transacted on the forest, and an extension of fire-protection cooperation with owners of private lands within and adjacent to this forest.

Item No. 227—Tongass National Forest.—The amount now provided for the Tongass National Forest, \$12,524, is changed to \$15,224, an increase of \$2,700. Business on this forest is increasing rapidly in accordance with the general progress of Alaskan development. There has been a large increase in timber-sale business and further increase is anticipated. Receipts from timber sold from this forest during the fiscal year 1917 increased 20 per cent over the previous year, and a corresponding or greater increase is probable for the fiscal year 1919. Applications are on file for one or more large sales for paper-pulp manufacture. To meet this expected increase in the timber-sale business it is desired to provide for five scalers at \$1,200 for four months each, \$2,000. An increase of \$700 is also estimated for other expenses connected with the expected increase in the timber-sale business.

Item No. 228—Tonto National Forest.—The amount now provided for the Tonto National Forest, \$4,525, is changed to \$6,972, an increase of \$2,447. The Tonto Forest is one of the largest national forests, containing 2,330,760 acres. This forest is very important from a grazing standpoint, and it is found that an increase in the appropriation is necessary to efficiently administer the forest and for a full utilization and protection of the range. Several sheep drive-ways traverse the forest and are used by a large number of sheep in trailing back and forth from the mountain range to the desert range. In order that deviation from this driveway may be prevented and full protection given to grazing permittees who are dependent upon the use of the adjoining range, it is essential that a more intensive administration of the sheep-driveway business be provided for. The requested increase will provide for one grazing examiner at \$1,200, three forest guards at \$900 for three months each, \$675, and other expenses—travel, forage, etc.—incident to a more thorough administration of the grazing business on the forest, \$572.

Item No. 229—Trinity National Forest.—The amount now provided for the Trinity National Forest, \$20,484, is changed to \$19,484, a decrease of \$1,000. This decrease is due to a readjustment of the field force, resulting in a decrease in the expenses of forest administration.

Item No. 230—Tusayan National Forest.—The amount now provided for the Tusayan National Forest, \$9,541, is changed to \$12,904, an increase of \$3,363. The timber-sale work on this forest is increasing, the amount of timber sold

in the fiscal year 1917 being 6,536,000 feet b. m. in excess of the amount sold the previous year. This increase is expected to continue, and to provide for the proper administration of the timber-sale work it is necessary to estimate for an additional forest examiner at \$1,400, one scaler at \$1,000, and one scaler at \$1,000, for six months, \$500, and other expenses incident to increased timber-sale work, \$463.

Item No. 231—Uinta National Forest.—The amount now provided for the Uinta National Forest, \$5,727, is changed to \$4,555, a decrease of \$1,172. This decrease is on account of a readjustment of the field force, resulting in a reduction of the estimate for traveling and other field expenses.

Item No. 236—Wasatch National Forest.—The amount now provided for the Wasatch National Forest, \$7,300, is changed to \$5,000, a decrease of \$2,300, on account of the transfer to the statutory roll of one forest ranger at \$1,400 and one clerk at \$900.

Item No. 237—Washakie National Forest.—The amount now provided for the Washakie National Forest, \$7,726, is changed to \$6,726, a decrease of \$1,000. This decrease is on account of the readjustment of the field force, resulting in a reduction of the estimate for traveling and other field expenses.

The CHAIRMAN. The next item in which there appears to be a change is item 246, for "additional national forests created or to be created under section 11 of the act of March 1, 1911 (36 Stat. L., p. 963), and lands under contract for purchase or for the acquisition of which condemnation proceedings have been instituted for the purposes of said act, \$65,200." You seem to have dropped the proviso.

Mr. POTTER. Item 246 provides the amount for the additional forests created under section 2 of the act of March 1, 1911, the Weeks law, and it is simply reduced \$900 on account of the transfer of a clerk from the miscellaneous to the statutory roll.

The CHAIRMAN. The proviso is dropped because it is permanent law, I assume.

Mr. POTTER. Yes, sir. The change in item 249 is simply the change of a telephone operator at \$600 from the miscellaneous to the statutory roll. The change in item 251, in reference to district 4, is a decrease of \$360 on account of the transfer of a messenger boy from the miscellaneous to the statutory roll. The change in item 253 for district 6 is caused by the transfer of a telephone operator at \$600 from the miscellaneous to the statutory roll.

Item 255 is for the headquarters office in the District of Columbia, and there is a decrease of \$1,080 on account of the transfer of a messenger at \$360 to the statutory roll and the transfer of a watchman at \$720 to the Office of the Secretary. So that, while there is an apparent decrease in the appropriation for the Forest Service of \$720, that is taken up by a similar increase in the Office of the Secretary.

The CHAIRMAN. Before you leave the statutory roll, you made a statement a moment ago that you had about 200 of your force in France at this time.

Mr. POTTER. Yes, sir; about 240 men have gone from the Forest Service into war activities.

The CHAIRMAN. Are they paid out of the funds of the Forest Service or are they paid by the War Department?

Mr. POTTER. They are paid by the War Department, and in a good many instances we have employed temporary men in their places, but not altogether.

Mr. Graves' salary, for example, is \$5,000 and that is lapsing because Mr. Graves has a commission as lieutenant colonel in the Reserve Corps of the Army, and his salary and expenses are being paid by the War Department.

It is pretty hard for me to tell just how much of our statutory roll money will lapse on account of the statutory roll men being engaged in war work. I think probably it will amount to between \$40,000 and \$50,000. I do not feel, however, that it would be safe to reduce our statutory roll on that account, because we need the full number under normal conditions. I would prefer to let the statutory roll remain as it is and simply allow those salaries to lapse where it is not absolutely necessary to fill the places by the appointment of temporary men.

The CHAIRMAN. I did not have in mind to convey the idea that I thought of reducing your statutory rolls at all. I just wanted to know, for information, how those salaries are handled, because it is a very natural question which will arise on the floor of the House during the discussion of this bill.

Mr. POTTER. Of course, if the existing conditions were going to be permanent we could make some reductions in the statutory roll, but we do not feel that this would be advisable at present.

The CHAIRMAN. These men in the service in France are paid salaries about equal to those which the statutory roll would give them anyway; some less and some greater, probably?

Mr. POTTER. Their salaries range from \$36 a month for the ordinary privates up to, I think, \$3,500 a year, which is the salary of a lieutenant colonel.

Mr. CANDLER. These salaries are not transferred in any way when a man does not fill the place; the money is just not used, and it is permitted to lapse and remain in the Treasury?

Mr. POTTER. The statutory-roll money that is not used simply lapses and remains in the Treasury.

The CHAIRMAN. I had in mind to bring out the fact that these men who are in France are not drawing double salaries.

Mr. POTTER. No, sir; they are on the pay roll of the War Department.

The CHAIRMAN. The next item in which there is a change is item 257, "For the selection, classification, and segregation of lands within the boundaries of national forests that may be opened to homestead settlement and entry under the homestead laws applicable to the national forests." The amount asked for is \$70,100.

There seems to be a decrease of \$8,300, and you have explained that by saying it is due to transfers.

You have some new language there, as follows: "and for the examination and appraisal of lands in effecting changes authorized by law." Will you explain the reason for that?

Mr. POTTER. There have been a number of laws passed during the last few years authorizing exchanges of lands within the national forests for the purpose of consolidation, and we have had no specific authority or appropriation for the examination of those areas, particularly the private lands which were to be exchanged. Therefore, we oftentimes have had to delay negotiations when otherwise we might have gone ahead and made the examinations.

We have pending an exchange with the State of Washington which was authorized in 1915, and a special appropriation of \$50,000 made to cover the expenses for examination of the lands on the condition that a like amount be spent by the State. That involves the consolidation of some 500,000 acres of unsurveyed school lands owned

by the State of Washington, scattered throughout the national forests.

The examination of the sixteens and the thirty-sixes, the school lands, has been completed, but the examination of the lands which the State is to receive in exchange for them will require another season's work, and it is evident that we will have to exceed the \$50,000 authorization in order to complete the surveys, mainly on account of the increased cost of supplies and other things connected with the work.

A request was made by the State authorities that we include an item of \$10,000 this year to complete the survey work, the State already having provided additional funds to meet its share of the increased cost. But we felt that it would be better to provide for meeting the necessary expense in a general way, as would be done by this language, so that whatever amount was found necessary, whether \$6,000, \$8,000, or \$10,000, might be taken out of this lump-sum fund and in that way enable us to take care of these additional demands without asking for any increase.

The CHAIRMAN. How are you getting along with your classification of these lands?

Mr. POTTER. We have completed the classification on about 130,000,000 acres of the gross area of the national forests, leaving about 40,000,000 acres yet to be classified. This includes the privately owned lands within the exterior limits of the forests, as well as the Government lands.

The way this work is progressing, even with such curtailment as will necessarily be made on account of the loss of men who have gone into the military service, we will be able to finish it within a few years.

The CHAIRMAN. The next item in which there is a change is item 258, "for the survey and platting of certain lands, chiefly valuable for agriculture, now listed or to be listed within the national forests," and so forth. Will you explain that?

Mr. POTTER. On the survey item we are making a decrease of \$10,000 and a transfer from the miscellaneous to the statutory roll of \$9,600, so that there is an apparent decrease of \$19,600.

In the survey and platting of homestead entries in the national forests we have now caught up and can begin to curtail the expenditures on that work. When we first started on the survey work, we had four or five years' work ahead of us—that is, there had been no previous authorization for such surveys, and the entrymen who had been on the lands for four or five years were waiting for the surveys so that they could prove up and get patent to their lands.

Then, also, through the eliminations that have been made as a result of the classification, the number of entries has been reduced so that we feel sure that we can keep the work right up to date with a somewhat less amount than we have had previously, and have proposed to reduce this appropriation \$10,000.

The eliminations from the National Forests during the past three or four years have amounted to some 13,000,000 acres. Of course, a good portion of the agricultural land, which naturally lies along the exterior boundaries of the forests, has been eliminated as a re-

sult of the classification, so that the number of entries made in the national forests is decreasing.

On the next item, No. 259, "for fighting and preventing forest fires and for other unforeseen emergencies," we are asking \$150,000, which has been the customary appropriation.

In years like the past one, the \$150,000 does not begin to meet the needs, but the attitude of the committee heretofore has been that they felt it would be best, when we have an unusual season of this kind, for us to meet it through creating a deficiency rather than to have a larger permanent appropriation than would be needed under normal conditions. I would say that, in order to protect the forests under normal conditions, we need more than \$150,000. The \$150,000 only meets the needs in an unusually favorable season. But, of course, owing to the need for retrenchment all along the line, I feel that we ought not to ask for any increase in this appropriation at the present time, although it is not enough under normal conditions.

The CHAIRMAN. How much would you say you should have?

Mr. POTTER. I feel that it ought to be \$250,000, which was the average cost for the five years previous to 1917, but I would not urge that increase at this time.

Mr. RUBY. Will you give us again the amount of the deficiency in this item, and the amount expended?

Mr. POTTER. The total amount expended was \$1,024,000. The deficiency is \$775,000. We made up about \$100,000 by decreases in other lump-sum appropriations. That is, we curtailed other work to the extent of about \$100,000 before we created any deficiency at all. We first spent the \$150,000 regular appropriation and then cut into our other appropriations about \$100,000, in an effort to avoid creating a deficiency.

The CHAIRMAN. Your real deficiency, however, was a million dollars?

Mr. POTTER. The total amount expended was \$1,024,000.

The CHAIRMAN. And your deficiency was something like \$750,000.

Mr. POTTER. We are asking for \$775,000.

The CHAIRMAN. And the difference in those items is made up out of the \$100,000 you took out of the lump-sum appropriations before you created a deficiency?

Mr. POTTER. Yes, sir. We tried in every way we possibly could to meet the situation without creating a deficiency. We curtailed other work and took money from the lump-sum funds so far as we possibly could to pay the fire fighters, but we were not able to handle the situation in that way.

Year before last we were able to get through in that way with an expenditure of about \$225,000 for fire fighting, and that made it unnecessary to create a deficiency, but this year we could not handle it by curtailment of other work and were compelled to create a deficiency.

Mr. HUTCHINSON. Is it lawful for you to create a deficiency in any appropriation?

Mr. POTTER. Yes, sir; the Secretary has authority to create a deficiency where the money is used for the protection of Government property or, as I understand it, for the saving of life.

The CHAIRMAN. The general statute covers that. Now, Mr. Potter, I wish you would take up item No. 260, "for the purchase and main-

tenance of necessary field, office, and laboratory supplies, instruments, and equipments, \$161,100." There seems to be no change in that item.

Mr. POTTER. On that item there is no change. There is need for additional equipment for the laboratory, which we plan to purchase, and there has been a considerable increase in the cost of supplies that we use. But through curtailment in the quantities purchased, we will be able to keep our expenditures within the present sum, so that we are asking for no increase in that item.

The CHAIRMAN. Do you furnish the Madison laboratory out of this fund?

Mr. POTTER. Yes, sir; with equipment.

The CHAIRMAN. Take up the next item, No. 261, "for investigations of methods of wood distillation, and for the preservative treatment of timber, for timber testing," and so forth, the amount being \$173,260.

Mr. POTTER. On that item, for the Madison laboratory, we are asking for an increase of \$20,000 to meet the demands of war work. In general, an effort has been made to cooperate to the fullest possible extent with the War and Navy Departments, the Emergency Fleet Corporation, the various committees of the Council of National Defense, and other Government agencies on any and all war problems relating to forest resources—to the manufacture, purchase, and most efficient use of wood and other forest products. Further, an effort has been made to cooperate along the same lines with manufacturers working on war orders who use forest products as raw material.

Some of the principal lines of activity have been:

1. Methods of kiln drying spruce and its substitutes for airplane construction so that it will be at least as strong and tough as air-dried material. At the beginning of the war engineers commonly refused to accept other than air-dried material. It has been shown that spruce and several of its substitutes can be kiln dried safely, and the methods developed have been approved by the Signal Corps and are being adopted by commercial plants. Large numbers of strength tests have demonstrated conclusively that properly kiln-dried stock is at least equal to the most carefully air-dried material. It requires about a year to dry airplane material properly in the air. It can be kiln dried in from 10 to 30 days, depending upon its thickness, etc. This speeds up production.

2. Tests of mechanical properties which have been under way for the last 10 or 15 years have furnished a basis for Army and Navy airplane specifications for wood, and international specifications as well. Our tables of strength values are the general basis for airplane design where American woods are used.

3. Kiln drying of wagon stock. Methods were largely developed before the war. The principal activities have been in assisting manufacturers of war orders to put them into practical effect. This makes possible the use of material in from two to three months from the saw, instead of one to three years, and reduces losses in drying 20 per cent or more.

4. Aid has been given to the Ordnance Department in the redesign of containers and the revision of container specifications. The kinds of woods used have been greatly enlarged, in some cases from 1 to 15,

and the strength of containers increased, at the same time effecting material reductions in the cost.

5. A large amount of work is being done on veneers and laminated construction to determine strength values and many phases of proper technique, including methods of gluing.

6. All possible assistance has been rendered the Emergency Fleet Corporation in its wooden shipbuilding program, including all phases of the proper technique in the use of wood, specifications for timbers, treenails, preservatives, etc.

7. The lumber requirements of navy yards have been reviewed and all of the experience of service experts brought to bear on the revision of specifications and the coordination of Navy requirements with manufacturing conditions.

8. Assistance has also been rendered on a large number of other subjects, such as methods of kiln drying black walnut for gunstocks, substitutes for black-walnut stocks, methods of impregnating wood-nose plugs for shells to prevent expansion, substitutes for red willow in the construction of wooden legs, revision of lumber and timber specifications for miscellaneous purposes, including cantonments, assistance in improved methods and in speeding up production of acetate of lime, cooperation with the Bureau of Mines in its work on gas masks, etc.

As an indication of one of the real values of this work, I have a letter from the Assistant Secretary of War, under date of December 7, addressed to the Secretary of Agriculture, as follows:

WAR DEPARTMENT,
Washington, December 7, 1917.

SECRETARY OF AGRICULTURE,
Washington, D. C.

MY DEAR MR. SECRETARY: The report on the assistance given by the Forest Products Laboratory at Madison, Wis., to the manufacturers of escort wagons, with special reference to the conditioning of wood stock, has been received at the office of the Quartermaster General. I wish to express to you the appreciation of this department for the invaluable assistance given to the manufacturers on Government contracts.

The problem of obtaining dry wood stock for Army vehicles is a very serious one, and one that is in need of constant attention. Comparatively few manufacturers have been using artificially dried wood stock for vehicles, and they are badly in need of advice on this subject in order that they may more efficiently meet the requirements of the Army.

I feel sure that the results of your efforts to give the manufacturers the benefit of the knowledge of the Agricultural Department will be felt immediately and that the Army will profit by your assistance in this matter as well as the manufacturers.

Please accept my deep appreciation of the work of your department and its readiness to render any service which it can offer.

Very respectfully,

BENEDICT CROWELL,
Assistant Secretary of War.

We have allowed several of our experts to be transferred to the Signal Corps in order that they may work directly under the orders of the War Department. All of these facts indicate that the work which is being done at the Madison Laboratory is of real value in helping the Signal Corps and the Army in general to work out the big problems before them in meeting the needs of the war. The War Department has made available, since the 1st of July, some 75,000 to be used by the Forest Service on special investigations. So we feel

that we are rather modest in only asking for an increase of \$20,000 for this work, which seems to be of such great importance.

The CHAIRMAN. You think this will be a sufficient sum to do the work effectively?

Mr. POTTER. I think it will be, with the assistance we will get from the War Department.

The CHAIRMAN. Take up item 262, "For experiments and investigations of range conditions within national forests or elsewhere on the public range, and of methods for improving the range by reseeding, regulation of grazing, and other means, \$35,000."

Mr. POTTER. There is no change in that item, Mr. Chairman. We expect to continue the experiments and investigations of range conditions along about the same line as they have been conducted heretofore. We are getting splendid results that are of material value to the stockmen using the public grazing lands, showing them how, through improved systems of management, they may increase the meat production upon those ranges, and we have just published, on November 15, Bulletin No. 588, giving some of the practical results of studies and experiments that have been carried on at the range experiment stations.

We have three of these stations, one located in Utah, one in New Mexico, and one in Arizona.

In reference to item 263, "For the purchase of tree seed, cones, and nursery stock for seeding and tree planting within national forests, and for experiments and investigations necessary for such seeding and tree planting, \$145,640," we are reducing that \$20,000 by the curtailment of the planting operations. We can not reduce this item any further, however, without serious loss of nursery stock that has been grown and will be wasted unless we can transplant it; but we will curtail sowing new seed in our nurseries and other activities, so that we can reduce the item \$20,000. We feel that this is one of the activities we can curtail without serious loss during the period of the war.

The CHAIRMAN. What portion of that \$145,640 will you expend in taking care of the plantings you already have, and what portion will you devote to new plantings?

Mr. POTTER. About \$10,000 of this item will be spent for investigations in nursery work and planting, and of the remainder we plan to spend about \$50,000 in growing seedlings in the nurseries and about \$85,000 in planting trees in their permanent places in the forests. When a plantation is once established it is taken care of thereafter by the regular administrative force and involves no drain upon this item.

The CHAIRMAN. You do not want the committee to get the idea that you intend to cease all planting operations in the future; that is not your policy?

Mr. POTTER. No. It is planned to stop the sowing of seed in several of the smaller nurseries and to decrease the amount sown in other nurseries, but it is not the intention to stop the planting of the stock that has already been raised in the nurseries.

In reference to Item No. 264, "for silvicultural, dendrological, and other experiments and investigations independently or in cooperation with other branches of the Federal Government, with States and

with individuals, to determine the best methods for the conservative management of forests and forest lands," there is no change. We expect to continue the investigative work along the usual lines. Of course, we expect to change the projects largely to investigations and studies that will tend to give information needed in connection with the war problems, but the new demands of that kind fully offset the studies which we find can be discontinued, so that it will not be possible to make any decrease in the item without curtailing work which we feel ought to be carried on, although we can meet all of the increased demands without any increase in the appropriation.

The CHAIRMAN. Now, take Item No. 265, "for estimating and appraising timber and other resources on the national forests preliminary to disposal by sale or to the issue of occupancy permits, and for emergency expenses incident to their sale or use, \$100,000." You seem to have an increase there.

Mr. POTTER. In Item 265 we are asking for an increase of \$30,000. Twenty thousand of that is to be used in timber estimates and surveys and \$10,000 in range inspection. The increased need for timber surveys is, to quite an extent, in anticipation of war needs—to find out exactly where we have supplies of spruce material suitable for airplanes and of the other materials that will be needed in the different war activities. It is also to keep up with our increasing business. The sales last year of timber on the national forests amounted to 2,000,000,000 feet, while the cut was only 775,000,000 feet, so that contracts have been made for a large amount of timber which will be cut in the future. In order to keep up with the surveys needed in connection with this increase in business and also to get the information that we should have in reference to the location of spruce timber and other timber which will likely be in demand, we will need an additional \$20,000.

On the grazing estimates and surveys we have concentrated our work very largely on getting information that would enable us to increase the number of stock on the range and, as I said before, have made actual increases during the past year of some 200,000 head of cattle and 200,000 head of sheep. With the ranges stocked up to the limit, as it were, we must make a much closer inspection and keep much closer watch to prevent damage than we would otherwise. That means that we have taken a number of our best trained and most experienced grazing men and put them into this inspection or survey work. We feel that at least during the period of the war we ought to increase our grazing inspection and survey work in order that we may carry the extreme limit of stock on the national forest ranges, and it is for the purpose of taking care of the inspection work made necessary by the increased demands for meat production that we are asking for the increase of \$10,000 for grazing survey.

For these two reasons we are asking that this item be increased \$30,000, to take care of the immediate demands for surveys of timber supplies and the grazing resources.

The CHAIRMAN. In your sale to the Government, do you sell at the normal market price or do you have some special arrangement with the Government? How do you manage that?

Mr. POTTER. There is no general provision for furnishing free timber to other departments of the Government, except the Reclamation Service, the Navy Department, and the Alaskan Engineering Com-

mission. When we give timber to them we have figured it at the normal market price. We simply assume credit for the normal market value of the timber. That is covered in a report to Congress each year, which I understand has already been made by the Secretary.

Mr. LEE. So that your department gets credit for all the sales it makes at the market price?

Mr. POTTER. Yes, sir.

The CHAIRMAN. Take up item 266, "for other miscellaneous forest investigations," etc.; there seems to be no change there.

Mr. POTTER. There is no change in that item.

The CHAIRMAN. That is for office work, largely?

Mr. POTTER. That is for the office work here in Washington, for the map making and work in connection with the preparation of the publications. There is no decrease in the demand for this kind of work.

The CHAIRMAN. The next item is No. 267, "For the construction and maintenance of roads, trails, bridges, fire lanes, telephone lines," etc., \$450,000. Is there any change in that item?

Mr. POTTER. There is no change in that item.

The CHAIRMAN. Can you give us a brief explanation of that?

Mr. POTTER. The total value of the permanent improvements that have been constructed on the national forests under the different appropriations from year to year now amounts to about \$7,000,000. Of this amount about \$5,000,000 represents improvements for protection of the forests, such as roads, trails, telephone lines, and other improvements of that kind. About \$1,750,000 is the value of administrative improvements, such as ranger cabins, pastures, and improvements that have been applied to governmental use in the administration of the forests; and about \$250,000 is for range improvements, drift fences, water developments, and other improvements which we have made to increase the grazing use of the forests.

The maintenance of these improvements in good order is a considerable item, and we anticipate that about \$160,000 of the \$450,000 appropriated must be used for maintenance of the improvements that have already been constructed.

So that, aside from the \$50,000 which is specifically appropriated for grazing improvements, it leaves only about \$240,000 for new construction. Every year now the amount needed for maintenance will increase, and without any increase in the appropriation the amount for new construction will decrease, but, of course, from year to year, without increased area added to the national forests, the need for new construction will decrease. Hence, I do not anticipate that any increase in the total amount of the appropriation will be necessary, but each year we will simply use more on maintenance and less on new construction.

The CHAIRMAN. How many miles of road do you contemplate building out of this fund, and at about what average cost per mile?

Mr. POTTER. The average cost per mile of the roads that have been built in the national forests has been \$812. They are not hard surfaced roads. They are just good grade dirt roads. The average cost of the trails is \$72 a mile; the average cost of the telephone lines, \$67 a mile.

The CHAIRMAN. Do you have the figures showing the number of miles you have constructed of each?

Mr. POTTER. The number of miles of roads is 2,919 and of trails 25,197.

The CHAIRMAN. And of telephones?

Mr. POTTER. Twenty-three thousand one hundred and seventy-seven miles.

The CHAIRMAN. And you propose to construct this fiscal year how many miles of each?

Mr. POTTER. About 20 miles of road, 950 miles of trail, 1,130 miles of telephone lines, 10 bridges, 51 lookout stations; and of administrative improvements we contemplate the construction of 24 ranger stations at a cost of \$650 each, 41 barns at an average cost of \$231 each, 87 other outbuildings at a cost of about \$75 each, and about 79 miles of pasture fences at an estimated cost of about \$176 a mile. I have a full statement here, Mr. Chairman.

The CHAIRMAN. I would be very glad if you would put that in.

(The statement referred to is as follows:)

Protective improvements:

Roads, 20 miles, at \$812-----	\$16, 240
Bridges, 10, at \$698-----	6, 980
Trails, 950 miles, at \$72-----	68, 400
Telephone lines, 1,130 miles, at \$67-----	75, 710
Fire breaks, 26 miles, at \$118-----	3, 068
Lookout structures, 51, at \$236-----	12, 036

Total-----	<u>182, 434</u>
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Administrative improvements:

Ranger station dwellings, 24, at \$650-----	15, 600
Barns, 41, at \$231-----	9, 471
Other buildings, 87, at \$76-----	6, 612
Fences, 79 miles, at \$176-----	13, 904

Total-----	<u>45, 587</u>
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Grand total-----	<u>228, 021</u>
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It will be seen from the above that the proposed construction expenditure of \$228,021 is 80 per cent for protective improvements and 20 per cent for administrative improvements.

Mr. RUBEY. In addition to the amount you have estimated here, you also get about a million dollars from the Federal-aid road act?

Mr. POTTER. Yes, sir. Of the money made available under the Federal-aid road act we have made no expenditures as yet except for surveys, but we expect to start construction on a number of projects next year. That money is available until expended, so there is no need of haste in the matter.

Mr. RUBEY. What is the amount available?

Mr. POTTER. It is \$3,000,000 now. It has been running three years—a million dollars each year. Up to date the Secretary has authorized negotiations with local authorities for agreements on 45 different projects throughout the different States. Twenty-three of these agreements have been executed by the local authorities. That is, they have signed up for the surveys on at least a 50-50 basis. The estimated cost of completing the work covered by these agreements is \$1,200,000, of which \$535,000 is Federal money. So that the expenditures as yet are small when compared with the amount that has

been made available. The regulations under section 8 require completion of a location survey prior to the beginning of construction. For this reason, and also because of delays due to getting the cooperative agreements executed and in creating the proper organization for handling the work on such large dimensions, no construction work has been done this year. We have had great difficulty in getting engineers, and all kinds of labor has been scarce. Mr. Page has lost quite a number of his engineers. They have gone into the Army to take up military work. Under these circumstances there has been difficulty in completing the surveys that we agreed to make under these cooperative agreements. It is expected that as a result of the past season's work approximately 570 miles will have been surveyed, and that by the opening of the next field season plans for 21 projects will have been approved, provided it is clearly evident that the use of the labor and materials will not be detrimental to the prosecution of the war and provided bids from the contractors are not excessive. It is now expected that the department will be ready to start construction on each one of these 21 projects next summer.

It is felt, however, that unless the road will contribute toward the winning of the war or the development of mineral or agricultural resources, we should defer the construction. So that we shall be guided by that general policy of not starting actual construction on any of these projects unless it seems at least that it will not be detrimental to the prosecution of the war. In other words, we will not take the men that are needed in other activities and will not undertake projects except those that will actually develop resources that are needed—agricultural, mineral, or timber.

The CHAIRMAN. What type of roads do you propose to build under this Federal-aid road act through the forest—trunk-line roads?

Mr. POTTER. They are mainly trunk-line roads, although some lateral or feeder roads are contemplated, but only a very few feeders. They are, I should say, 90 per cent trunk-line roads.

The CHAIRMAN. Any questions, gentlemen?

Mr. YOUNG of North Dakota. Is any revenue derived from the commercial use of the telephone lines?

Mr. POTTER. No, sir.

Mr. YOUNG of North Dakota. They are only for Government use?

Mr. POTTER. They are used for Government purposes or under cooperative agreements. Where commercial lines tie in they give us reciprocal privileges to offset the use of our lines.

The CHAIRMAN. Any further questions, gentlemen? If not, Doctor, your next item is 268, which is a new item "And hereafter, in lieu of actual transportation expenses, the Secretary of Agriculture may authorize the payment of not to exceed 2 cents per mile for a motorcycle or 6 cents per mile for an automobile used for necessary travel on official business in the Forest Service."

Mr. POTTER. Yes, sir; we have found in our administrative and protective work that it is very advantageous to have some of our forest officers, particularly the forest supervisors, authorized to use their automobiles on official business when it would expedite matters. This was first authorized three or four years ago by a regulation of the Secretary, providing for reimbursement on a mileage basis, which it was contemplated would cover the actual cost of operation but

not yield any profit or cover any reimbursement for the cost of the machine or insurance or anything of that kind. The Comptroller of the Treasury expressed a doubt last summer as to whether the regulation was authorized by law and suggested that it would be best to have it specifically authorized by Congress. Otherwise he would feel constrained to advise the Treasurer against the payment of bills for the use of automobiles by the forest officers. Therefore, we have inserted this item in the estimates and ask your approval of it. The mileage, as you will note, is not to exceed 2 cents for a motorcycle or 6 cents for an automobile, which barely covers the cost of the gasoline, oils, and other materials that are actually used in the operation of the machine. In fact, with the heavier machines they must be operated at a loss, even at the 6 cents per mile. With this restricted allowance there is no inducement for a man to use his machine unless he feels that there will be an absolute gain in time by doing so. It yields no profit to him at all, and we are watching the conditions under which machines are being used and are issuing very strict instructions with respect to the same. I feel sure that no abuse is growing out of this regulation and that it is a real economy; that the use of automobiles to the limited extent that they are being used by the various forest officers is a real gain in the administration of the forests and particularly a real protection in fire fighting, where speed counts above almost everything else. We hope that the committee will approve extending authority to pay this low mileage rate for reimbursement for use of motor cycles and automobiles by the forest officers.

The CHAIRMAN. How long has this practice been in effect in the Forest Service?

Mr. POTTER. Between three and four years, under the Secretary's regulation.

The CHAIRMAN. Why is it that you do not adopt the practice of purchasing machines for these officers?

Mr. POTTER. It would be much more expensive. It would cost us three times as much to purchase and operate the machines ourselves as it does in the way proposed under this item. It is most economical to have the machines owned by the men and simply pay them a mileage reimbursement for the use made of the machines on official business.

The CHAIRMAN. About how many machines would operate under this provision?

Mr. POTTER. There are about 400 altogether, and the total cost last year was about \$32,000.

Mr. YOUNG of North Dakota. As I understand it, if one of your representatives was out on a motorcycle for 25 miles, that would cost the Government 50 cents?

Mr. POTTER. Yes, sir.

Mr. YOUNG of North Dakota. And if he went out with an auto it would cost the Government \$1.50?

Mr. POTTER. Yes, sir.

Mr. YOUNG of North Dakota. It would cost very much more than that to hire a horse?

Mr. POTTER. Yes. Of course, you could not hire an automobile from a garage at anything like these rates.

Mr. YOUNG of North Dakota. You could not hire an auto; you could not even hire a team for that amount?

Mr. POTTER. No. We find that it is a real economy and means greater efficiency in the work.

Mr. OVERMYER. It would represent a very great outlay if you did buy the machines, and the maintenance would almost equal what you are paying under this?

Mr. POTTER. The maintenance would be very much more than the mileage cost. It would cost us at least twice this amount to operate our own machines and keep them in repair.

The CHAIRMAN. I think it would be very well for the committee to consider the proposition of having the same provision apply to all of the bureaus and officers of the department if we consider this proposition favorably.

Is there anything further on that item that you would like to inquire about?

If not, we will take up the next one, item 269, for the enforcement of the Weeks act.

Mr. POTTER. There is a decrease of \$3,230 due to transfer of one law clerk at \$2,750 and one messenger at \$480 to the statutory roll, reducing the amount to \$21,770. This is an authorization for use of money appropriated under what is now known as the Weeks law, and of the \$25,000 as it stands this year, \$15,000 has been allotted to the solicitor's office and \$10,000 to the Forest Service. It is used entirely in the payment of the men who are engaged upon the purchase work.

The CHAIRMAN. How are you getting along in the enforcement of that act? Are you still buying some land?

Mr. POTTER. The National Forest Reservation Commission has curtailed the purchases to areas which are needed to fill out units where lands have already been purchased. Mr. Lee, who is a member of the commission, can inform you perhaps better in detail about that than I.

The CHAIRMAN. Very good. We will cross-examine him later.

Mr. POTTER. But, in general, the purchases are being curtailed, and only lands that are needed to fill out practicable administrative areas are being bought. In other words, it is the feeling of the commission that they ought not to expand and start purchases on new areas during the perior of the war, but simply hold their purchases down to such areas as are needed to fill out the present administrative units.

The CHAIRMAN. Doctor, I notice in item 270 you have dropped that authorization for prospecting in mineral lands?

Mr. POTTER. Yes, sir.

The CHAIRMAN. I notice in your note that that is continuing legislation?

Mr. POTTER. Yes, sir. We dropped that because the solicitor is of the opinion that it is continuing legislation.

The CHAIRMAN. My recollection is that the word "hereafter" went out on a point of order in the House, did it not?

Mr. POTTER. Yes, sir. It was the intention of the committee that it be made continuing, and the solicitor's opinion, I believe, is based upon that fact.

SUMMARY OF PRINCIPAL ACTIVITIES OF FOREST SERVICE—Continued.

Appropriations and activities.	Allotment (lump sum).	
	1918	1919
SELECTION, CLASSIFICATION, AND SEGREGATION OF LANDS.....	\$78,400	\$70,100
<p>To secure an accurate classification of the lands in the national forests so that all lands which are chiefly valuable for agriculture may be made available for homestead settlement and entry and permanent plans made for the administration and protection of the remaining areas which are permanently chiefly valuable for national-forest purposes, and to compile the detailed maps, reports, and results of investigations upon which such classification is based; to make the preliminary surveys so that the agricultural land may be listed with the Interior Department and opened to entry; to answer all inquiries and complaints from land seekers desiring to secure possible agricultural lands within the national forests; and to make the investigations, examinations, and appraisals necessary to carry out the terms of land exchanges authorized by Congress. In such exchanges the first essential is a careful valuation of all the lands involved.</p>		
SURVEY AND PLATTING OF LANDS.....	69,300	49,700
<p>For the passage to patent of homestead tracts listed under the act of June 11, 1906, accurate surveys by metes and bounds are required in those regions where the public surveys have not been extended. This subappropriation will maintain 14 survey parties in the field and provide subsistence, transportation, and equipment, besides the forms on which the returns are prepared, and the necessary inspections and overhead. In 1919 it will be necessary to make more than 450 patent surveys of forest homesteads. This work dovetails closely in with the classification of forest lands. The need of having the surveys made by men who are grounded in the classification work and forest policy is the reason why it is handled by the Forest Service.</p>		
FIGHTING AND PREVENTION OF FOREST FIRES.....	150,000	150,000
<p>The employment of lookout men, patrolmen, and fire fighters, purchase of emergency tools, equipment, and subsistence stores, transportation and subsistence of fire fighters, and transportation of equipment and supplies purchased and already on hand, in connection with the detection and suppression of fire endangering national forest resources, and for other unforeseen emergencies.</p>		
FIELD, OFFICE, AND LABORATORY SUPPLIES AND EQUIPMENT.....	161,100	161,100
<i>Stationery.....</i> Including mimeograph supplies, drawing, tracing, blotting, wrapping, carbon, blue-printing, and other paper, writing and drawing inks, notebooks, envelopes, typewriter supplies, card-index supplies, guides, and cases, photostat supplies, pens, pencils, erasers, paper clips, etc.	50,140	50,620
<i>Field equipment.....</i> Including canvas water bags and buckets, carrying cases, marking axes and hatchets, road and trail signs, tentage, emergency wire, flags, knapsacks, etc.	41,530	44,700
<i>Instruments.....</i> Barometers, compasses, levels, transits, plane tables, rules, climbers, drafting instruments, heliographs, planimeters, etc.	12,905	12,400
<i>Furniture.....</i> Filing cases, transfer cases, card-index cabinets, chairs, desks (replacements), drafting tables, adding machines, typewriters, blue-print and photostat machines, map cases, and other office equipment.	18,705	14,220
<i>Machinery and supplies for Forest Products Laboratory.....</i> Equipment for timber tests to determine the woods most suitable for aircraft construction and to determine the best veneers and laminated construction for aircraft; miscellaneous equipment for work on war projects in the use of wood and other forest products; equipment for pulp and paper investigations; replacement of worn-out equipment; and miscellaneous supplies.	12,500	13,700
<i>Miscellaneous.....</i> Supplies for rubber-stamp plant; rent, heat, light, water, power, and telephone at supply depot, Ogden, Utah; freight, drayage, express, parcel post; packing supplies; and other miscellaneous expenses.	25,320	25,460
FOREST PRODUCTS INVESTIGATIONS AND EXPERIMENTS (LABORATORY, MADISON, WIS.).....	155,600	173,260
<i>Timber tests.....</i> To secure reliable data on the mechanical properties of various species and forms of timber. War work is very largely on woods for aircraft construction, to determine the relative value of various woods for airplane parts, including propellers; to determine the mechanical properties as a basis for design; to	36,600	40,260

SUMMARY OF PRINCIPAL ACTIVITIES OF FOREST SERVICE—Continued.

Appropriations and activities.	Allotment (lump sum).	
	1918	1919
FOREST PRODUCTS INVESTIGATIONS AND EXPERIMENTS (LABORATORY, MADISON, WIS.)—continued.		
check methods of kiln drying in order that the greatest strength and toughness may be assured; to investigate the strength and other properties of veneers; also tests of containers used in the shipment of ordnance and other military supplies.		
<i>Dry-kiln tests</i> These are now confined almost entirely to the improvement of methods for kiln-drying airplane and military vehicle woods. Both offer great opportunities for increasing production of urgently needed materials by kiln-drying in from 10 days to 3 months materials which air dry in from 1 to 3 years. The drying of airplane woods is critical because strength and toughness may be greatly reduced by improper methods.	\$21,000	\$22,500
<i>Wood distillation and derived products</i> Investigations to increase the output of the products of hardwood and softwood distillation, especially acetate of lime; investigations to increase the production of ethyl or grain alcohol from wood waste; cooperation with the Bureau of Mines on war problems connected with gas masks and poisonous gases.	16,000	18,000
<i>Pulp and paper investigations</i> To determine new woods suitable for pulp and paper making, to improve processes in order to increase output, improve quality, etc. The program will include work on all of the pulp-making processes.	19,000	19,000
<i>Wood preservation</i> Methods of impregnation and coating to prevent the absorption of moisture and hence shrinking and swelling, with particular reference to airplane parts; the preservation of woods, with particular reference to wooden ship building; technique of gluing, with particular reference to veneer and laminated construction.	14,000	16,000
<i>Cooperation and demonstration</i> Assistance and advice to manufacturers of war orders, including commercial demonstration of processes developed in experimentation; chiefly methods of kiln drying without injury; spruce and its substitutes for airplanes and the various woods used for airplane propellers; of proper methods of drying the woods used in the construction of military vehicles; of improved methods of distillation for hardwoods and softwoods, primarily in order to increase the production of acetate of lime; assistance in the training and development of Government inspectors of wooden materials of various kinds; of improved methods of pulp and paper making.	25,000	81,000
<i>Industrial and statistical investigations</i> To develop the best technique in the building of wooden ships, airplanes, military vehicles, the making of veneers, to secure the proper woods and grades for construction work at navy yards, etc.; the collection of statistics, with particular reference to those needed during the war; cooperation with the War and Navy Departments and other governmental agencies along the lines covered by the preceding, including assistance and advice.	24,000	26,500
RANGE EXPERIMENTS AND INVESTIGATIONS	35,000	35,000
<i>Revegetation of depleted and partly depleted range lands and improvement in character of forage</i> Investigations to determine (1) the lands where seeding to cultivated species of forage plants is economically possible, the species to use, and the methods which give best results; (2) the possibility of growing promising native species under cultivation so as to secure seed for use in range reseeding; (3) to develop plans of range management which will secure revegetation by natural reseeding and maintenance of the forage crop on range lands with a minimum loss of forage through restriction of grazing.	7,400	7,300
<i>Distribution and economic importance of herbaceous and shrubby plants</i> Collection and identification of range-plant specimens and the compilation and distribution of notes on their forage value, abundance, distribution, and requirements of growth, for the purpose of aiding local forest officers and stockmen in putting into effect improved methods of range and live-stock management which are based upon the character of the forage crop and the growth requirements of the plants composing it.	5,600	5,60
<i>Methods of handling range stock</i> To investigate the methods of handling stock on the range for the purpose of working out and aiding to put into application methods which will minimize waste of forage and injury to range through trampling, bring about even distribution of stock over the range and thus secure full use of all areas	11,000	12,400

part 13

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

153
18

BUREAU OF SOILS

TUESDAY, JANUARY 8, 1918



WASHINGTON
GOVERNMENT PRINTING OFFICE
1918

AGRICULTURE APPROPRIATION BILL.

HOUSE OF REPRESENTATIVES,
COMMITTEE ON AGRICULTURE,
Tuesday, January 8, 1918.

The committee met at 10.30 o'clock a. m., Hon. A. F. Lever (chairman) presiding.

BUREAU OF SOILS.

The CHAIRMAN. The committee will come to order. Turn to page 115 of the Book of Estimates and take up the Bureau of Soils. Dr. Whitney, chief of that bureau, is here and will present his estimates.

STATEMENT OF MR. MILTON WHITNEY, CHIEF OF BUREAU OF SOILS, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Doctor, I notice that you have a few transfers from the lump fund to the statutory roll; I presume those are at the same salaries?

Mr. WHITNEY. At the same salaries.

The CHAIRMAN. And the lump fund has been reduced?

Mr. WHITNEY. Yes, sir.

The CHAIRMAN. The only other change in your statutory roll is shown in items 8, 9, and 10?

Mr. WHITNEY. Yes, sir. We have five clerks at \$900 that we have found it impossible to hold at those salaries. For the last few months it has been very difficult to get clerks at \$900 and impossible to hold them. We have now no one, I think, in those places at all, and while we have requests in for certification it has been impossible to fill them.

The CHAIRMAN. Let us see. You have dropped five clerks at \$900 each and have asked for two clerks at \$1,200 each and two clerks at \$1,000 each, in lieu of the five dropped.

Mr. WHITNEY. Yes, sir.

Mr. HARRISON. It involves a net decrease of \$100.

The CHAIRMAN. Making a net decrease in the fund of \$100.

Mr. WHITNEY. Yes.

The CHAIRMAN. Take up your lump-fund appropriations. Your first item is on page 117, item 30, for chemical investigations of soil types, soil composition, and soil minerals, the soil solution, solubility of soil, and all chemical properties of soils in their relation to soil formation, etc. Doctor, I would like for you to give the committee briefly what you have been doing and what you propose to do under this item; a sort of résumé of your work.

Mr. WHITNEY. Under the chemical investigation of soils we have been doing a great deal of routine work. There has been an unusual

amount of demand for information from individuals, experiment stations, cooperating organizations, other bureaus, and other departments. Last spring, particularly, there was a flood of requests from people who were taking up gardening for the first time or going into new forms of agriculture. So that more than usually this fund has been called upon for routine chemical analyses. We have devoted all the time we could to our regular investigative work, on the character of the soil solution, the chemical changes that occur on the application of lime, and so on. The division is very much crowded with samples, however, and the work is going on about as usual.

The CHAIRMAN. People send in their samples for analysis and you make these analyses and send them answers?

Mr. WHITNEY. Yes, sir.

The CHAIRMAN. In addition to that you do certain research work also?

Mr. WHITNEY. Research work so far as our means permit.

The CHAIRMAN. Any questions on that item, gentlemen? If not, take up item 31, for physical investigations of the important properties of soil which determine productivity, and so on, \$12,225, with no change in the appropriation there. Briefly outline your work under that item, Doctor.

Mr. WHITNEY. The work there has gone on about the same as heretofore with this exception, that, in view of the war situation, our effort has been to concentrate on the working out of methods and plans for carrying into effect the fertilizer work; that is, we have called upon the physicists for such help as they could give in their line that has a bearing upon the problems that are being developed in the fertilizer research division. In fact, we have drawn rather heavily on this force for assistance of that character. Otherwise, the work is going along as heretofore.

The CHAIRMAN. Any questions on that, gentlemen? If not, take up item 32, for exploration and investigation within the United States to determine possible sources of supply of potash, nitrates, and other natural fertilizers. Doctor, that is rather important. Tell us what you have done so far this year.

Mr. WHITNEY. We have continued our work on potash, having erected a plant, or nearly completed a plant, for the separation of potash from kelp on the Pacific coast. We have made a survey of the possibilities of getting a supply of potash from the cement mills. We have just published an exhaustive report on that subject, and find that, with the installation of apparatus for recovering the flue dust, there is a possible annual supply of 100,000 tons of potash from this source. That is about half the normal amount that we use in this country.

Mr. McLAUGHLIN. Has that report been published?

Mr. WHITNEY. That report has been published.

Mr. McLAUGHLIN. And available?

Mr. WHITNEY. And available.

Mr. WARD. Cement mills are selling potash, now?

Mr. WHITNEY. Yes.

Mr. WARD. I bought some this year.

Mr. WHITNEY. Mr. Brown, who is here, will tell you the progress that has been made. It is really a very encouraging project.

The CHAIRMAN. Do you propose to present the potash proposition under this item or under the new item further on?

Mr. WHITNEY. Cement potash would come under this item. The kelp potash comes under the other.

The CHAIRMAN. Suppose you take up the cement potash under this item and Mr. Brown may tell us about the other.

Mr. WHITNEY. Mr. Brown has even more data in regard to the cement potash if you care to hear from him on that.

The CHAIRMAN. All right, Mr. Brown, suppose you tell us about your work.

STATEMENT OF MR. FREDERICK W. BROWN, ASSISTANT IN CHARGE OF INVESTIGATIONS OF FERTILIZER RESOURCES, BUREAU OF SOILS, UNITED STATES DEPARTMENT OF AGRICULTURE.

Mr. BROWN. Our investigation of the cement industry covered every plant in the United States producing 100 barrels or more, and practically all the plants produce that much, and it showed that there was available annually 70,000 odd tons of potassium oxid, and that with a very slight change in the operation of the kilns 100,000 tons would be available, perhaps 150,000 tons. In normal times we use about 250,000 tons.

Mr. RUBEY. What is the expense?

Mr. BROWN. The cost of installation is rather heavy. The operation is very low indeed, and that includes depreciation as well as actual operating expenses. There is practically no deterioration in a plant once it is up, but it will cost from \$50,000 to \$100,000 to put the apparatus in at a large mill; perhaps more than that under present conditions.

Mr. LEE. I am very much interested in this proposition. I think I received a communication from you on the subject some time ago.

Mr. BROWN. Yes, sir; you spoke to me about the mill in your district and I sent you a copy of the bulletin.

Mr. LEE. Do you find that the cement people are cooperating in any way in this proposition?

Mr. BROWN. They are going ahead just as fast as they can get apparatus. There are three of the largest mills in the country that have the apparatus already installed. At least three more are actively engaged in putting the apparatus in, and several others are dickering with the owners of the patent or those who control the patent looking to the installation of the apparatus just as quickly as they can get together. I think there is not much doubt that the cement industry will be forced to install collecting apparatus.

Mr. LEE. The plant at Rockmart is run by pretty nice people, and I was wondering what they had done.

Mr. BROWN. I have had no communication with them at all, except that they have sent in samples. The Clinchfield, in Tennessee, is doing something.

The CHAIRMAN. You say it would cost \$50,000?

Mr. BROWN. I think it would cost at least that for a 3,000-barrel mill in normal times and probably, owing to the increased cost of steel and labor, it would cost \$100,000 for a 3,000-barrel mill now.

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Mr. WARD. I have been informed that it cost \$250,000 to install the plant at the Alpha mill in Greene County, N. Y.

Mr. BROWN. They put in a waste-heat boiler in addition to the other machinery, and probably the whole installation did cost them that much. The waste-heat boiler is an improvement, because from it they are now getting their entire power for the whole mill. Fifteen hundred horsepower is gotten from the waste heat of the mill that formerly was not used.

The CHAIRMAN. Tell us briefly, if you can, in nontechnical language, just what this process is?

Mr. BROWN. Simply that when you feed the raw mix into the mill you have a certain amount of insoluble potash with it; the limestone, and particularly the shale or clay contains potash, just as most soils do, but it is unavailable because it is insoluble. In the hot kiln it is rendered soluble, is volatilized, and passes off through the stack in a fume. The precipitator passes that fume up a series of pipes and, by means of electric wires in the pipes, it throws over to the side everything that is in a solid or liquid form, and then a hammer on the outside of the pipe jars it down to the bottom. The material includes the dust, which is sucked over by the draft, and also the precipitated potash. It contains as high as 10 or 12 per cent soluble potash, and at present most of the mills are simply marketing the dust for fertilizer purposes. It is just about as high grade as the kainit which we bought from Germany—10 or 12 per cent. Two of the mills, the Riverside Portland Cement Co., and the Alpha, however, are putting in leaching apparatus, which will enable them to separate the potash from the dust, the latter then being returned to the mill, where it is worth money as raw mix.

Mr. LEE. In a 3,000-barrel capacity plant, how much potash would you get daily, on an average?

Mr. BROWN. There are no two mills alike, and the potash lost will vary all the way from half a pound to a barrel of cement to over five pounds to a barrel of cement. There is one mill in the country that is actually throwing away over five pounds of potash for every barrel of cement that it produces.

Mr. LEE. What is that potash worth?

Mr. BROWN. Muriate of potash is worth from \$350 to \$400 a ton.

The CHAIRMAN. Have you figured whether or not, with the installation of this machinery in the cement mills, you can sell this potash under normal times in competition with German salts?

Mr. BROWN. I think there is no doubt about it, because the cement industry in this country is up against the necessity of controlling the dust nuisance. They have got to do that and they know it. If they can put in an apparatus that absolutely stops the dust, as this does, and at the same time gives them a valuable product, they can afford to sell that product at any price. The industry as a whole has recognized that fact for some time.

The CHAIRMAN. Then, if all cement factories should put in this apparatus, you would have a sufficient supply of potash to supply the country?

Mr. BROWN. No; we would have about 100,000 tons at least, as against the consumption prior to the war of 250,000 tons.

The CHAIRMAN. I got the impression in a hasty reading of your bulletin that you would have available for this next year something like 75,000 tons.

Mr. BROWN. No. There has probably been produced in this country, according to the Geological Survey statement, somewhere between 25,000 and 30,000 tons this past year. This is an increase from 16,000 tons in 1916.

Mr. LEE. From this source, you mean?

Mr. BROWN. Oh, no; from all sources. There are only three cement mills that are now operating—the Riverside, the Security (up here at Hagerstown), and the Alpha on the Hudson.

The CHAIRMAN. How much are they turning out?

Mr. BROWN. I do not know. It is hard to get accurate figures as to how much they do produce. I do not have them in my head at least. The average for the entire country is about two pounds for the barrel of cement.

Mr. LEE. You think it is a very practical proposition, do you?

Mr. BROWN. I think it is very practical; to tell you the truth, I think it is our one best bet on potash.

The CHAIRMAN. Anything further on this particular phase of the potash question?

Mr. BROWN. I might say that the blast-furnace industry should do the same thing. They feed potash into the blast furnace with their raw material in the same way, and it escapes in their washers and up the stack. They are compelled to wash the gases, because it is combustible gas, and they use it in their stoves and boilers. They wash it out now and they might just as well put in this electric precipitator. It has been tried, and it will do the work. They can get a clean, dry, hot gas to use in their stoves and boilers and recover the potash with the dust. But you can not get the steel men to do it.

The CHAIRMAN. What do you know of the Searles Lake deposit of potash?

Mr. BROWN. I know that it is there. There is considerable potash there, but there are very decided technical difficulties about recovering it. There are two companies now operating at the lake turning out some potash. Whether they can do it in normal times or not I am not prepared to say. I rather doubt it, because it is a very difficult technical problem. They have a bad mixture of salts there, including potash, and the potash is about 2½ or 3 per cent of the brine. It is about 7 per cent of the total solids in the brine, the balance being other salts, which have to be separated before the potash is available.

The CHAIRMAN. There are two companies now operating there?

Mr. BROWN. Yes, sir.

Mr. LEE. Is that in Nebraska?

Mr. BROWN. No, in southern California.

Mr. LEE. Is not there a potash-producing lake in Nebraska?

Mr. BROWN. There are a number of lakes in Nebraska that produce potassium carbonate. There they pump the brine out and evaporate it.

The CHAIRMAN. Are you in charge of the nitrate plant of Arlington?

Mr. BROWN. Yes, sir.

The CHAIRMAN. Tell us what you are doing there?

Mr. BROWN. We are actually producing synthetic ammonia; that is to say, we take nitrogen and hydrogen and run them through this plant and get ammonia. The technical problem there was a mechanical problem largely. We mix the gases in proper proportions, compress the mixture to 1,500 pounds to the square inch, and subject it to a heat of 600° C. We then pass it through the reaction chamber and get a certain proportion of it as ammonia. That plant is of very much the same type as the large plant being installed by the War Department in Alabama, with some modifications.

The CHAIRMAN. Are there any further questions along this line, gentlemen; or anything further that you would like to say, Mr. Brown?

Mr. BROWN. I have nothing further to add, but I would like very much to have any of you gentlemen who may be interested to come over and see that ammonia plant working. It is a very interesting process, and there are only two plants of the kind in the United States of which we have knowledge; one of them being the General Chemical Co.'s plant in New York, and the other the one we have installed.

Mr. HUTCHINSON. I think you invited us last year to visit that plant?

Mr. BROWN. We did not have it going at that time.

Mr. HUTCHINSON. There was some danger of an explosion at that time, if I remember.

Mr. BROWN. When you are using pressures of that kind there is some danger of an explosion at all times.

The CHAIRMAN. Is the Government going to use your plan in the construction of this larger plant?

Mr. BROWN. No. They are using the General Chemical Company's plan, which is a modification of this same process. Ours is a straight Haber machine, just the same as has been erected in Germany, so far as we know. I do not suppose it is exactly the same, because there is no description of the thing in the books. We took the general principles and worked out the details. The General Chemical Company's plan differs in several very important ways, so I understand, although I have not seen it and know nothing about the details. That is the one that the War Department has followed.

The CHAIRMAN. We will discuss the kelp proposition a little later.

STATEMENT OF MR. MILTON WHITNEY, CHIEF OF THE BUREAU OF SOILS, UNITED STATES DEPARTMENT OF AGRICULTURE—
Continued.

The CHAIRMAN. Now, Dr. Whitney, on page 118, item 33, for the investigation of soils, in cooperation with other branches of the Department of Agriculture, and so on, you have no change in that item. That is your soil-survey work proper?

Mr. WHITNEY. Yes, sir.

The CHAIRMAN. Give us a little idea of the progress you have made during the year.

Mr. WHITNEY. That is going on about as usual. The States are cooperating more and more liberally. We surveyed in detail the last fiscal year 37,225 square miles and covered 9,182 square miles in

reconnaissance surveys. The work is going along without any hitch at all. We had some difficulty about the draft. We have lost quite a number of our men, but the States have been helping us out and we have been able to keep our force up so far and to go right along.

Mr. CANDLER. Is it a fifty-fifty cooperation with the States and the Government?

Mr. WHITNEY. Yes; in the case of about 20 States. Texas has just had an appropriation larger than we can meet, and so has Iowa, but the others are putting in as much as we are putting in and making progress.

Mr. CANDLER. Are you only making surveys now where the States cooperate?

Mr. WHITNEY. We make surveys in quite a number of the States which do not cooperate to the extent of providing funds. Most of the States are sympathetic and help us as far as they can, but there are some States where they have no funds.

The CHAIRMAN. Any questions on this item, gentlemen? It is familiar to us all?

Mr. JACOWAY. How long does it take you to make one of these surveys and prepare the map?

Mr. WHITNEY. It takes from 6 to 9 months to do the actual field work, according to the size of the county. If the county has 1,000 square miles, it will take about 9 months, and then the reports have to be sent in here and put in shape for publication. I might say that, if the season breaks on us and we do part of the field work in the fall and are unable to continue field work in that section of the country during the winter, we have to draw our force out and put the men where they can do field work. So there is liable to be a suspension of our field work for a period of as much as 6 months, this being a factor over which we have no control at all.

Mr. JACOWAY. You can take your maps and tell as a rule what the soils in the counties you have surveyed are adapted for, can you not?

Mr. WHITNEY. Yes, sir. After the survey is finished, the report is sent back here and notes and drawings are made. All the data have to be assembled, interpreted, and gotten in the proper shape for publication, and that work takes several months. It takes at least a year for us to do our work and usually about a year to get the material printed.

The CHAIRMAN. Any further questions, gentlemen? If not, take up item No. 34, for the examination and classification of agricultural lands in forest reserves.

Mr. WHITNEY. This work is going on very smoothly. There is nothing new about it at all. We are working in cooperation with the Forest Service. They indicate where the work shall be done and we are responsible only to see that it is done properly.

Mr. RUBEY. How many acres of land do you examine and classify each year?

Mr. WHITNEY. I do not think I have that.

Mr. RUBEY. I just wanted to get some idea of how fast you were getting along with this work.

Mr. WHITNEY. It is reported to the Forest Service. We do not publish these reports. The whole thing goes to the Forest Service.

Mr. RUBEY. You simply assist in that regard?

Mr. WHITNEY. Yes, sir.

The CHAIRMAN. I think, perhaps, that information was given the other day in the hearings. Is there anything else you wish to add to your statement?

Mr. WHITNEY. That is all.

The CHAIRMAN. Gentlemen, are there any questions? If not, we will take up item 35. There seems to be some new language there, for the investigation and demonstration of the best method of obtaining potash on a commercial scale, \$127,600.

Mr. WHITNEY. I will have Mr. Brown discuss that.

STATEMENT OF MR. FREDERICK W. BROWN, ASSISTANT IN CHARGE INVESTIGATION OF FERTILIZER RESOURCES, BUREAU OF SOILS, UNITED STATES DEPARTMENT OF AGRICULTURE—
Continued.

The CHAIRMAN. Mr. Brown, give us the information you have on that subject.

Mr. BROWN. This is the appropriation, Mr. Chairman, for the kelp plant. The language is somewhat changed. Last year we had merely a continuing appropriation—authority to use the unexpended balance of the fund which was originally granted. That was for construction work. This is for the operation of the plant during the coming fiscal year. That is the only difference. The plant is up, with the exception of the final evaporating apparatus. We are actually producing dried kelp and kelp char and at present selling both, in the absence of leaching and evaporating apparatus. The proceeds of the sales at the present price of potash are now actually carrying the plant, or would carry it if the money was not being turned back into the Treasury as miscellaneous receipts.

The CHAIRMAN. You prefer the language of the new item to that carried in item 37?

Mr. HARRISON. An appropriation was made for the erection of a plant in the fiscal year 1917. The plant was not completed, and Congress made available for expenditure during the current year the unexpended balance of the original appropriation. The plant has now been completed, or is practically completed, and this new item is merely to provide for its operation.

The CHAIRMAN. All right, Mr. Brown.

Mr. McLAUGHLIN. Did not you take over a plant from a private company, partly completed?

Mr. BROWN. No, sir; we erected our own plant from the ground up. The only thing we did not erect was a wharf. We did rent a wharf which runs out five or six hundred feet into the sea, at least. But we had to buy a harvester and erect the plant. Three 50-foot driers are in and operating very satisfactorily.

Mr. RUBEY. How long have they been in operation?

Mr. BROWN. They actually started operation about the first of September. They did not run continuously, however, until perhaps a month later.

The CHAIRMAN. This is a very interesting item, and I would be very glad if you would briefly outline the work you have done and its prospects of success.

Mr. BROWN. As I say, the drying apparatus is in. Three 50-foot rotary driers are installed and the dried kelp is carried by a conveyor to retorts where it is retorted very much as coal is coked. From the retorts we get large amounts of combustible gas, which we are not as yet able to utilize, and a large body of tar, which we are just preparing to investigate to find out what there is in it. Nobody knows. It is very interesting stuff. We will get a whole line of by-products from the tar—benzene, acetone, and several other products—and we hope to get ammonia as well; and the char itself, after it has been leached, will be excellent charcoal. We hope to find a market for that; if we can not, we can use it for fuel. As I said, the evaporating plant is not yet installed. We have not been able to get prompt delivery of the evaporators, but I think they are now on the ground. The last I knew of them they had passed El Paso on the way West, and I think they are probably on the ground and probably being erected.

Mr. McLAUGHLIN. At what point on the coast is this plant?

Mr. BROWN. Summerland, about 7 miles from Santa Barbara. It is in Santa Barbara County, about 7 miles from Santa Barbara.

The CHAIRMAN. What will be the capacity of this plant when completed?

Mr. BROWN. The capacity will be around 200 tons of wet kelp per day of 24 hours.

The CHAIRMAN. What would it cost you to manufacture a ton of the finished product?

Mr. BROWN. We have not come to that. The finished product will be potash salt, and we can not produce it yet.

The CHAIRMAN. Can you approximate it?

Mr. BROWN. No; I can not because I do not know how much it will take to run these evaporators. They will have to be shaken down before they will actually run efficiently.

Mr. HUTCHINSON. You say 200 tons of wet kelp. How much will that produce of potash salts?

Mr. BROWN. That will produce about 20 tons of dry kelp, and the dry kelp will run at least 25 per cent, or 5 tons of potash salts.

Mr. HUTCHINSON. Are you experimenting with any other source of potash?

Mr. BROWN. Oh yes, we are, with silicates, particularly cement-kiln and blast-furnace operation.

Mr. HUTCHINSON. Are you discovering anything in minerals?

Mr. BROWN. No; we have not discovered any deposits of soluble potash salts.

Mr. HUTCHINSON. The country after a while will not produce very much if you do not get potash?

Mr. BROWN. As I said a few minutes ago in regard to the other item, there is a possibility of producing every bit we need from the cement industry and the blast-furnace industry. These two can more than give us every bit of soluble potash we need.

Mr. ANDERSON. Can you give us any figures on the cost of production of dried kelp?

Mr. BROWN. I can not give you that very accurately, Mr. Anderson. As nearly as we can tell, the potash of the dry kelp is costing us somewhere in the neighborhood of \$3 a unit of 20 pounds. The

normal price is something like 70 cents, and that simply confirms what we have held all along, that we have got to get another line of products out of kelp or we never can hope to reduce the net cost of potash to the point where it can compete with the German product. But there is a whole line of by-products which are to be recovered, and it is just a question of going after it in the best way.

Mr. ANDERSON. If it is possible for the cement industry and blast furnaces to produce all the potash that is required in the country, what would be the advantage of developing this more expensive method?

Mr. BROWN. Because there are unlimited possibilities of expansion for the use of potash as fertilizer. There are whole sections of the country where they do not use a pound, and they ought to.

Mr. ANDERSON. You can not expand an industry on the basis of a cost figure that is excessive.

Mr. BROWN. I think if we had the potash right now we could, by a very little propaganda under the present conditions, induce the farmer perhaps to double the use of potash.

Mr. ANDERSON. I know, but, as I understand you, you can not now produce this potash from kelp by the present method on a commercial basis.

Mr. BROWN. We can not produce dried kelp. When we get our evaporators in and are producing salts and the rest of these by-products, I think we have a very good show to do it.

Mr. HUTCHINSON. You do not suppose potash will ever come down to 70 cents a unit, do you?

Mr. BROWN. I do not think it will unless the Germans see effective competition in this country, and then they can drop it half.

Mr. HUTCHINSON. Of course, but I do not think they will.

Mr. McLAUGHLIN. And your cost of production is what?

Mr. BROWN. Three dollars a unit.

Mr. McLAUGHLIN. And the normal price is what?

Mr. BROWN. Was 70 cents.

Mr. HUTCHINSON. It is selling now for \$7.

Mr. BROWN. Five to six dollars.

The CHAIRMAN. Will you answer just a few questions for me briefly? What is the cost of the plant to date?

Mr. BROWN. About \$100,000.

The CHAIRMAN. What is the cost of those private plants?

Mr. BROWN. I do not know. I know that the Hercules claims to have paid \$2,000,000 for their plant. The Diamond Match Co. has paid in the neighborhood of half a million, and Swift & Co. has paid in the neighborhood of about half a million; but these figures may include a great deal of operation as well as construction. Those are just general figures floating around.

Mr. McLAUGHLIN. Are these other plants of which you speak turning out the complete article?

Mr. BROWN. Those that are after potash are turning out nothing but kelp ash. They are simply burning the material and marketing the ash. The Hercules Powder Co. are not after potash primarily but are after acetone and are marketing a high-grade potash as a by-product.

Mr. McLAUGHLIN. What is the percentage of potash in that ash?

Mr. BROWN. It runs as high as thirty or forty per cent. They take the kelp and dry it and then just simply turn it into another kiln and burn it up—turn an oil blast right on the dried kelp and burn it.

Mr. McLAUGHLIN. Do you know anything about how much of that product any of these plants are turning out?

Mr. BROWN. No; the actual production figures I do not know.

Mr. McLAUGHLIN. Do you know what it is selling for?

Mr. BROWN. Yes, from five to six dollars a unit.

The CHAIRMAN. What is the cost of operation of the plant this last year?

Mr. BROWN. We have not been operating it except intermittently.

The CHAIRMAN. I mean the present year, of course.

Mr. BROWN. We have been operating only since September, and for a month or two operation was intermittent, and that has been mixed up more or less with construction at the same time. Labor has been used for both operation and construction at the same time during that period.

The CHAIRMAN. Can you give us an estimate of the probable cost of operation in another year?

Mr. BROWN. The estimate is here, \$127,600.

The CHAIRMAN. What prospects are there that the by-products can be manufactured profitably in normal times?

Mr. BROWN. We still think that we have just as good a chance as we had when we came to you in the beginning. We know the by-products are there. We know they are obtainable. It is just a question of getting them in the most economical way.

Mr. JACOWAY. If I understand you correctly, it costs the Government at this plant about \$3 to produce a unit of 20 pounds of potash?

Mr. BROWN. In that neighborhood. I do not have any accurate figures.

Mr. JACOWAY. Approximately?

Mr. BROWN. Yes.

Mr. JACOWAY. Then it will cost you \$300 a ton to produce the potash?

Mr. BROWN. Yes.

Mr. JACOWAY. Do I understand you to say that people who engage in the manufacture of potash can produce a unit of potash for 70 cents?

Mr. BROWN. No; but the Germans can. The Germans can put it here for 70 cents.

Mr. JACOWAY. At what figure can the people in America produce it?

Mr. BROWN. These people on the coast are producing it for about \$3 a unit and selling it for \$5.

Mr. JACOWAY. But you expect to get ammonia and a string of by-products out of the tar?

Mr. BROWN. Yes, sir; just as we can from coal tar or wood tar.

Mr. ANDERSON. Does the recovery of these by-products involve any additional expenditures by the bureau?

Mr. BROWN. No; the original estimate covered all that. It covered the installation of all this machinery for treating the kelp with the recovery of by-products.

Mr. ANDERSON. What I am getting at is this: You say you will get tar as a by-product, and from this tar you expect to get some additional by-products. Do you require additional machinery for that?

Mr. BROWN. It may be that we shall when we come to investigate the tar and find out what there is in it. It may very well be that on a large scale we will have to have suitable machinery to handle it, but I do not know what it is going to be. Nobody knows what is in that kelp tar. It has never been made before.

Mr. ANDERSON. And it is entirely speculative, without considering the by-products, whether the plant could run upon a commercial basis?

Mr. BROWN. It is problematical just exactly as it was in the beginning. I can not say now any more positively than I did then that the thing can be done, but I feel very great hope that it can be.

The CHAIRMAN. Any other questions, gentlemen?

Mr. JACOWAY. I would like to ask one question. There is a certain rock in the United States from which you have been trying to get potash. I believe?

Mr. BROWN. Alunite?

Mr. JACOWAY. That is the name of it. There are millions of tons of that rock in this country. What progress are you making with alunite?

Mr. BROWN. We have not been making any experiments. There are two companies that have been engaged in working the alunite deposits in Utah. One of them has gone out of business, so far as I know. I do not think it is operating at all; the other was the Armour plant, and that burned down a few months ago, at a loss of about \$250,000 according to the newspapers, and I have not heard that it has been rebuilt.

Mr. JACOWAY. Was it of incendiary origin?

Mr. BROWN. I do not know. They were getting potash. Whether the cost of producing the material, together with the freight charges from Utah to points in the East, was too high to permit of marketing the product profitably or not, I do not know.

Mr. JACOWAY. Can you state how it is that the Germans can produce potash for such a small sum as 70 cents a unit?

Mr. BROWN. Simply because they have got it in the ground. It is not combined in a rock or anything. All they have to do is to dig it out and purify it.

Mr. JACOWAY. Just like mining coal?

Mr. BROWN. Yes; or mining rock salt.

Mr. HARRISON. You might explain to the committee the change in language. The item for potash investigations carried in the appropriation act for 1917 provided that the potash should be sold at the market price. The present item provides that it shall be sold at a price to be determined by the Secretary of Agriculture.

Mr. BROWN. I think the real reason for putting in this language was that the market for potash is so narrow that it is hard to determine what the market price is. The quotation might be \$350 a ton, let us say, but when you actually try to sell a ton you can not for the

life of you get more than \$200 for it. That has actually happened. Now it seemed better that the Secretary should have authority at any time to fix a price which, in his opinion, is fair to charge for the material.

Mr. McLAUGHLIN. Would the product be sold for less than the cost of production at your plant?

Mr. BROWN. I should hope not; and as long as the war lasts the market price is almost certain to be high.

Mr. McLAUGHLIN. You strike out those words "market price" and as the words stand in the provision it will permit the Secretary to sell at a smaller price—at a much smaller price?

Mr. BROWN. Yes; and I can see how it might be desirable to do that if the agriculture interests of the country reach a point where they needed it very badly.

Mr. HUTCHINSON. You do not think that 20 tons a day will be enough to supply the country?

Mr. BROWN. No; it would not help much.

Mr. HUTCHINSON. Is not the potash sold on a unit basis altogether?

Mr. BROWN. Yes.

Mr. HUTCHINSON. Why don't you sell it at the market price?

Mr. BROWN. As I say, you can not always get a quotation on a unit basis.

Mr. HUTCHINSON. Oh, yes; you can.

Mr. BROWN. I have known of cases where they had great difficulty in getting quotations when they actually had potash to sell.

Mr. HARRISON. As I understand it, the reason for changing the language was, in the first place, that the Secretary thought the department ought to have the authority to fix the price in the light of conditions existing at the time of the sale. The plant, of course, was not established for the purpose of making a profit. If we work out important processes and reduce the cost of production, there does not seem to be any real reason why the Federal Government should charge enormous prices simply because other companies engaged in the business may be doing so.

Mr. McLAUGHLIN. Do you think there is a danger in these profits you speak of?

Mr. HARRISON. I imagine that the companies on the coast selling their product at the market price are getting pretty good profits.

Mr. McLAUGHLIN. This is all produced in connection with something else?

Mr. HARRISON. For use in the preparation of other products which these companies manufacture.

Mr. BROWN. Most of them are actually producing potash. They are out there with the primary object of getting the potash. That is true of all of them except the Hercules. They use the product in connection with their other business. Swift & Co. is in the fertilizer business. The Diamond Match Co. is there for potash for their matches.

Mr. ANDERSON. In view of the fact that 20 tons will not make any practical or appreciable difference in the price, I do not see why the Government should engage in a charitable enterprise and hand this stuff out for less than the market price. If you could bring about some economic result, a reduction in price or something of that sort,

by selling it at a reduced price, there might be some reason for it, but obviously you can not do that, and if you can not I do not see any reason why the Government should lose any money on it and attempt to sell it at less than the market price.

Mr. HARRISON. It will not be sold, of course, below the cost to the Federal Government.

Mr. RUBEN. They could put in a proviso to the effect that it shall not be sold for less than cost.

Mr. HUTCHINSON. Then, I am afraid they would not sell it at all.

Mr. HARRISON. A chemist recently has been assigned to the plant to devote his entire time to the by-product work, and we are hoping that he will be able to develop something which will reduce the cost of the main product.

Mr. YOUNG of North Dakota. If the department can not sell the stuff at all, it will be a total loss. Give him a free hand. If you put some figures in there at which nobody will buy it at, it will be a total loss.

Mr. BROWN. As long as present conditions last, there will be no trouble about selling it.

The CHAIRMAN. Is there anything further that you desire to submit on this question, or are there any further questions?

Mr. HUTCHINSON. Have you done anything in the matter of feldspar?

Mr. BROWN. Nothing excepting utilizing it for cement. It can be used in making cement.

Mr. HUTCHINSON. It is not soluble naturally?

Mr. BROWN. Oh, no; but the potash is rendered soluble as it passes through the heat of the kiln.

The CHAIRMAN. Is there any further statement you desire to make, Doctor Whitney?

Mr. WHITNEY. No; I think that covers the work.

The CHAIRMAN. Your item 26 is for general administration expenses. There is no change in that?

Mr. WHITNEY. No change in that.

The CHAIRMAN. That completes your bureau, Doctor.

Mr. WHITNEY. Do you want me to leave with you a statement that I was asked to prepare for the committee?

The CHAIRMAN. The committee will be very glad to have that summary of your work. Include that in the record.

(The matter referred to follows:)

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF SOILS.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
CHEMICAL INVESTIGATIONS.....	\$25,610	\$25,610
To investigate the chemical composition of soils and the soil solution and to study the chemical reactions involved in the liming of soils; to make chemical analyses of soils for the soil survey and of soils or liming materials for other bureaus or properly accredited parties.		
Much analytical work has been done upon lime materials with a view to determine their value for agricultural use. Nearly 600 chemical analyses were made during the past year for other bureaus of the department and properly accredited parties, and for the soil survey to aid in the proper correlation and classification of the various soils found in different parts of the country. Research work in connection with the chemistry of the soil solution and the liming of soils was also carried on.		

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF SOILS—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
PHYSICAL INVESTIGATIONS..... To investigate the mechanical composition and texture of soils and to assist in their classification by the determination of the relative amounts of different-sized particles in the various soils; to study the effects of changes in soil texture, temperature, atmosphere, and moisture on the productivity of the soil, and to note the influence of a change in one of these on the other related properties; to make mechanical analyses of soils submitted by the soil survey and by other bureaus of the department, and to assist other offices in work on mechanical and physical problems. Colloidal conditions of clays have been investigated to ascertain the relation of such conditions to the physical properties of the soil. Systematic study of the physical properties of important soil types has been begun and the usual mechanical analyses of soil samples collected by the soil-survey field parties have been made.	\$12,225	\$12,225
INVESTIGATIONS OF FERTILIZER RESOURCES..... To investigate by laboratory and field methods and by cooperation with commercial concerns all possible sources of the fertilizer ingredients, potash, nitrogen, and phosphoric acid; and also to investigate in a similar way any new methods proposed for treating already known sources of these materials, as well as to devise and test new methods, with a view to determine and develop the fertilizer resources of the country. A survey of the cement industry of the country has been made to determine the amount of potash lost. The results show conclusively that it is practicable to recover 100,000 tons of potash now wasted annually. A survey of the blast-furnace industry is now being made to determine the value of potash lost. With nitrogen the main investigation of the bureau has been the development of the Haber process of fixing nitrogen in the form of synthetic ammonia. The details of this process were not generally known in this country, and so far as the bureau is aware only one other synthetic ammonia plant has ever been erected in the United States. The problem is one of great mechanical difficulty, involving very high pressures and high temperature. The experimental plant at Arlington Farm is at present operating and producing synthetic ammonia. A somewhat larger unit is at present being installed, and the experimentation will be continued with a view to determine the most efficient temperature, pressure, and catalyzers. The problem of the oxidation of ammonia to produce nitrates or nitric acid is being attacked from two angles; one is the use of electrolysis with the production of ammonium nitrate, and the other the use of the so-called Ostwald process with the addition of electrical precipitation and the production of ammonium nitrate. The work with phosphoric acid has included experimentation on a commercial scale with the heat treatment of phosphate rock in an electric furnace and the collection of the evolved phosphoric acid by means of an electrical precipitator. This work demonstrated the practicability of the system and the possibility of producing a very high-grade product. Considering the imminent shortage of sulphuric acid for the production of acid phosphate by the ordinary method, this new method may prove of great importance to the fertilizer industry in the near future. Experimentation is now being conducted to work out, if possible, a still cheaper method for the heat treatment of phosphate rock by the use of some other source of heat than electricity. The question of the treatment of garbage and other city waste, with a view to recover valuable constituents for use as fertilizers, has been investigated. Results obtained influenced officials of the city of New Orleans to install a plant for the conservation of city garbage.	33,380	31,340
EXTRACTION OF POTASH SALTS FROM KELP..... To determine whether or not it is possible to produce potash salts from kelp at a net cost which will permit competition with the German product in normal times. Experimentation on a factory scale is to be carried out with processes designed to recover, in addition to the potash, a complete line of by-products, thereby reducing the net cost of producing the potash salts. An experimental plant has been erected at Summerland, Cal., and machinery for harvesting, drying, and distilling the kelp has been installed. The plant is now producing and selling both kelp char and dried kelp, the proceeds from which at present fully equal the cost of operation. Machinery for leaching the potash salts from the char and for evaporating and crystallizing the brine has been obtained and will be set up within the next month or six weeks. So far as it is now operating, the plant has satisfactorily accomplished what it was designed to do and there appears to be good reason for the hope that with the installation of the evaporating machinery it will be possible to demonstrate the commercial feasibility of this process.	150,253.62	127,600

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF SOILS—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
SOIL-SURVEY INVESTIGATIONS..... This work comprises the surveying, mapping, and classifying of the soils of important areas in different parts of the country, the preparation of reports containing descriptive matter relating to the soils, their character, origin, and value for crops, and to the agricultural conditions found in each area surveyed; the preparation of maps showing the distribution of the soils; and dissemination of information relating to the use of soils. The purpose is to acquire a knowledge of the soils of the United States and make it available for use by other bureaus and departments, agricultural colleges, experiment stations, and others engaged in the development of agriculture. This work was carried on in cooperation with 20 States during the fiscal year 1917, and 117 areas were surveyed in whole or in part, approximately 37,225 square miles being covered by detailed and approximately 9,182 square miles by reconnaissance surveys, making the grand total to date approximately 445,445 square miles covered by detailed and 493,494 square miles covered by reconnaissance surveys. Field parties are maintained in the Southern States during the winter months and Northern States during the summer months.	\$198,200	\$198,200
CLASSIFICATION OF AGRICULTURAL LANDS..... This work consists of assisting the Forest Service in the classification and segregation of agricultural lands in the several forest reserves with a view to determine their value for agricultural purposes, so as to enable the Forest Service to indicate what lands may be opened for settlement. During the past year land classification work was conducted in 22 forest reserves, located in nine States.	18,100	18,100
ADMINISTRATIVE EXPENSES..... The general direction and supervision of the various investigational activities of the bureau.	4,000	4,000

Page 1 of 1

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-SEVENTH CONGRESS

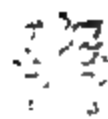
SECOND SESSION

IN THE

AGRICULTURE APPROPRIATION BILL

BUREAU OF CHEMISTRY

MONDAY, JANUARY 18, 1908



AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Monday, January 7, 1918.

BUREAU OF CHEMISTRY.

The CHAIRMAN. Turn to page 104 of the Book of Estimates, and we will ask Dr. Alsberg to present the estimates for the Bureau of Chemistry.

STATEMENT OF DR. C. L. ALSBERG, CHIEF OF THE BUREAU OF CHEMISTRY, UNITED STATES DEPARTMENT OF AGRICULTURE.

Dr. ALSBERG. Mr. Chairman, on the statutory roll the main change asked for is 12 additional statutory clerical places, with salaries ranging from \$1,200 to \$1,800 per annum, in lieu of 22 statutory places, at \$900 each, 1 at \$840, and 1 at \$720, making a net reduction of \$4,560 in the statutory roll. The object is plain. We can not get and hold competent people at the present salaries.

The CHAIRMAN. I do not think it is necessary to go into the statutory roll, except to ask whether all these transfers from the lump sum have been made at the same salaries.

Dr. ALSBERG. Yes, sir.

The CHAIRMAN. Have you any new places except those substituted for places at lower salaries which you propose to drop?

Dr. ALSBERG. No; there are no other new places. We have dropped some inspectors' places at lower salaries and substituted a fewer at higher salaries, without, however, increasing the total appropriation.

The CHAIRMAN. I do not think it will be necessary to discuss those changes until certain things have happened which I do not know about yet. Later on we may want further information on that. Take up your general expense items, beginning on page 108.

Dr. ALSBERG. There are no changes on page 108. If you desire a report on the work that has been done, I will make it.

The CHAIRMAN. Briefly, what are you doing and what do you propose to do?

Dr. ALSBERG. Under item 57, for conducting the investigations contemplated by the act of May 15, 1862, relating to the application of chemistry to agriculture, we are doing the miscellaneous research work requiring chemical methods of investigations for the various bureaus of the department, making investigations on new types of cattle food, the possibility of using waste products not now used for cattle food, carrying on the work on the utilization of cull potatoes and other cull agricultural products, research in the improvement of

methods of manufacturing and cheapening insecticides, research in plant physiology, particularly as to the best methods of applying fertilizer with reference to the time of growth, and similar investigations on the effect of fertilizer on the growth of plants. We are carrying on work on improving the methods of producing sorghum sirup and maple sirup, as well as a number of other investigations, chemical in their nature, and requested usually by other branches of the department not equipped to do chemical work.

The CHAIRMAN. In other words, this is your general scientific investigational work?

Dr. ALSBERG. So far as it applies to strictly agricultural products. We have, in addition, a lot of work in connection with the enforcement of the food and drugs act.

The CHAIRMAN. Take up your next item.

Dr. ALSBERG. The next item, No. 58, is for collaboration with other departments of the Government and consists very largely in making miscellaneous analyses of all kinds for other departments of the Government, analyses of a chemical nature that the other departments are not equipped to carry on. It also includes a lot of work assisting the Post Office Department in the prosecutions of frauds. We are doing a great deal of work, for instance, through the Post Office Department, to stop the sale and the transmission through the mail of all kinds of fakes, nostrums, particularly patent medicines and mechanical devices for curing people, which the medical profession calls "gas-pipe therapy"—ineffective mechanical devices for the cure of rheumatism and the like. There are a lot of devices of that sort going through the mails and a lot of frauds of all kinds in connection with which the Post Office Department requires chemical work to be done in order to determine the facts.

Then, under this appropriation, we have been carrying on a collaboration with the Bureau of Mines, which I described in some detail last year, regarding the dust-explosion work. Perhaps it will not be necessary for me to go into it now, further than to say that the Secretary has determined that the work be extended as a conservation measure—not under this item, but under the emergency appropriation—to prevent dust explosions in mills, elevators, and food-manufacturing plants. The mills and elevators of the country are constantly having fires and explosions, sometimes wrongfully attributed to alien enemy activities, which can easily be prevented if they will install certain devices the fire-preventive value of which is perfectly well known. We are cooperating in that work with the Food Administration and the Grain Purchasing Corporation. We have tried to induce people to install such devices. While this work is not carried on under this appropriation it is an extension of some of the work we are doing under this item.

There are a lot of smaller projects coming under this paragraph that it is perhaps not necessary to mention.

The CHAIRMAN. If there are no questions which any of you gentlemen wish to ask, take up item 59, for investigating the character of the chemical and physical tests which are applied to American food products in foreign countries, etc.

Dr. ALSBERG. The object of that work is to supply certificates to exporters. The work has increased very considerably under this

item, on the Pacific coast chiefly, because we are exporting from that part of the country to South America more than we did before the war. On the other hand, the work of furnishing certificates to exporters on the Atlantic seaboard has practically ceased, because there is now very little export of food to Europe except through the purchasing agencies of foreign Governments. We charge on the average about \$5 or \$10 for a certificate, which, of course, is covered into the Treasury.

The CHAIRMAN. The certificate is paid for by the exporter?

Dr. ALSBERG. By the exporter; yes, sir.

The CHAIRMAN. Any questions on that, gentlemen? If not, take up item 60, for investigating the preparation for market, handling, grading, packing, freezing, drying, storing, transportation, and preservation of poultry and eggs, etc.

Mr. ALSBERG. Work under that appropriation has been going on vigorously this year. We have taken particular pains to encourage the development of the small local poultry and egg packing houses. In consequence, I think, very largely of our work between 20 and 30 small establishments, involving an investment of only a few thousand dollars each, are being built all through the poultry-producing sections, which, of course, takes in a great part of the Southwest and of the Missouri, Ohio, and Mississippi Valleys. The rest of the country does not export much poultry or eggs. In consequence of this work we believe the shipping losses, the deterioration and the spoilage are very considerably reduced.

At the same time we have been cooperating with the Bureau of Plant Industry in their work on the shipping of perishables. Between the two bureaus, standard specifications for refrigerator cars have been developed, as a result of which the railroads have either rebuilt or have in process of construction between 3,000 and 4,000 refrigerator cars which will not leak but will hold the cold and will do the work for which they are planned. The refrigerator car of five years ago was most unsatisfactory and wasteful. It was apt to be too cold at both ends and warm in the middle, with the result that produce was frozen at the ends near the bunkers and spoiled from the heat in the center of the car. That may seem a paradoxical statement, but I think that was not infrequently the experience of shippers.

I might mention one further piece of work that is done under this appropriation. It is the work on the best feed for fattening poultry. You gentlemen probably know that it is not an economical proposition to fatten poultry on the farm and ship it to market unless you slaughter the birds on the farm and ship them as dead birds, which the average farmer is not in a position to do because the market demands a certain kind of packing. In consequence, the custom has been to have a fleshing establishment in connection with the small slaughterhouse. The reason that it is not profitable for the farmer to fatten a bird and ship it to a packinghouse is that the provisions for feeding the birds and keeping them in good condition in transit are not adequate. There is nothing like the 28-hour law to require this feeding, and it is not practicable. That makes the shipping of live poultry to market a cruel practice, and, furthermore, because the animal is small, the shrinkage is very great. The smaller the animal

the bigger the percentage of shrinkage. Therefore much of the flesh that the farmer puts on by intensive methods of fattening is pretty sure to come off before the bird gets to market. We have been working with the small packinghouses on the best method of preparing poultry for market. When I say "packinghouses" I, of course, do not mean the big packers in Chicago but the small houses scattered all over the producing section. Sometimes you can increase the weight of the chicken from 20 to 36 per cent in a week or 10 days' feeding if you do it right.

Mr. HAUGEN. Are not the cars equipped with troughs and things of that kind?

Dr. ALSBERG. They are equipped that way, and feeding is done to some extent, but we find that the shrinkage of the birds in transit is very great in spite of that.

Mr. ANDERSON. What is the value of the eggs and poultry produced in the United States yearly?

Dr. ALSBERG. I can not tell you. I did know, but have forgotten; but it runs into the hundreds of millions.

Mr. ANDERSON. Is it not approximately a billion dollars?

Dr. ALSBERG. Something like that, as I remember it.

Mr. ANDERSON. You say you have made great progress in stopping the loss from deterioration at the initial point; do you know what percentage? Can you give the committee the percentage?

Dr. ALSBERG. No; I could not give you any figures. All I can say is that during the past year there have been between 20 and 30 of these small poultry-packing establishments put up under the improved conditions, which will ship stuff to a market that will keep. Of course, we have been doing demonstration work with all the other packing houses on the improvement of handling. We have a poultry car which is equipped with all the best devices for handling poultry and eggs. This car travels around the country making dozens of small towns. In it are given demonstrations of the best methods of slaughtering and handling poultry and of the methods of candling eggs. Matters of that sort are demonstrated to thousands of people each year. But I think it is not possible to make an estimate in dollars and cents of exactly what is accomplished.

Mr. ANDERSON. Some years ago I think the testimony before the committee referred to this matter. It was estimated by the Department of Agriculture that there were a billion dollars' worth of poultry and eggs produced in the United States yearly. I think the record will reflect further the fact that 10 per cent of that was loss at the point of shipment as the result of improper handling, which would be \$100,000,000. Then it was estimated that 30 per cent more was lost from the place of production to the place where it was consumed. Can you state to the committee what improvement you have made along that line and the percentage of any decrease you have made?

Dr. ALSBERG. Any statement I made to you I think would be just a guess. I do not know how, in the absence of any definite machinery for collecting such statistics or data, it is possible for me to give you a definite statement. I can give you an example in which we happened to know one single phase, because statistics are available. That is with reference to the mashing of eggs that came into

New York. One of the pieces of work which is closed and which I reported on in former years was this: Immense quantities of eggs arrived broken at their destination. The question was to find out why they were broken and where they were broken.

We undertook such an investigation. We built an instrument which might be called a freight-car seismograph. It was really on the same principle as this instrument for measuring earthquake shocks. We fixed it up to use in cars and equipped some freight cars which the railroads loaned us without cost with these machines. The instrument recorded the shock to which the car was subjected and the time when that shock occurred. Having, of course, the routing of the car, and knowing where the car was at any given time, when the car arrived at destination we could take out the record of the shocks and tell exactly where that car had been badly handled. In consequence, we were able to locate two or three spots in the United States where the handling of car-loads of eggs by the railroads or the express companies was such as to damage eggs. We were able to determine what kind of flats and fillers were the best and what was the best method of storing the cases of eggs in a car. On the basis of this information, we made some recommendations to the railroad, which they have followed, and certain recommendations to the shippers. Measured by the claims for damages which were made by the shippers in the metropolitan district of New York three years after we made our recommendations, the breaking of eggs was immensely lessened. I can not give you the exact figures offhand. This applies to carload shipments, and not to small shipments not in carload lots.

Mr. JACOWAY. The Secretary of Agriculture, two years ago, standing where you are now, stated that the situation with regard to supply of meat for the American people was alarming. He said that the number of our people was increasing and that the American herds were decreasing; and he said that when a perfect refrigerator was evolved and the sea food, like clams, oysters, and fish, could be shipped to the central portions of the United States, he thought that the meat-supply proposition would be solved. Is this new refrigerator car about which you have spoken a complete success, and can you ship a carload of sea food, say, from the Atlantic coast into New Mexico with little loss in the shipment?

Dr. ALSBERG. You undoubtedly could. I do not want to give the impression that we have invented a new, wonderful, and original type of refrigerator car. We have not. What we have done, in conjunction with the Bureau of Plant Industry, is merely to determine what size of refrigerator car, with reference to the amount of ice capacity, is the best; what type of construction is the best; what type of insulating material gives you the best results. With a properly constructed car of that kind—I do not mean to say that somebody is not going to come along and improve the car—it should be possible to ship any perishable of the type you mention from one end of the country to the other. Possibly a good many of you know that nearly all the halibut you eat is caught off British Columbia. It used to be shipped through Seattle; now it is shipped also through Prince Rupert. There is little halibut in the East except Pacific coast halibut. Salmon is also shipped in the same way.

The CHAIRMAN. Take up the next item, Doctor, No. 61.

Dr. ALSBERG. Item 61 deals essentially with duplicating for the shipment of fish the work that we have done in the shipment of poultry. Shipping of fish is not organized, either commercially or practically, like the shipping of beef or poultry. It is done in great measure by small dealers who sometimes do it well and sometimes badly. Until we began our investigation we had no information as to whether a fish should be shipped by the wet-packed or the dry-packed method. The wet-packed method consists in putting fish in barrels, a layer of fish and a layer of ice and a layer of fish and a layer of ice. They arrived at their destination sloshing around in ice water or slush. The question arose, Was that an objectionable practice? We had the same question with reference to poultry. We have been able to demonstrate that shipping poultry in that way causes the poultry to lose in food value and flavor, because when ice melts it takes out some of the flavor from the food material. We have been doing the same thing with fish, and we found out that conditions for fish are the same, which is not exactly what you would expect, because a fish is an animal that lives in the water, but the skin of a dead fish has not apparently the power of shutting out water like the skin of a live fish.

Then we have been trying to organize the shipment of fish from the Gulf and Florida points to New York. The southern railroads have not understood good methods; the shippers down there have not understood the methods of shipping; and a great deal of the fish that has arrived in the North in the warmer months of the year has been lost. We have been at work on a campaign very similar to the poultry campaign in an endeavor to organize this work so as to bring about the adoption of the best methods of shipping fresh fish from Florida and Gulf points to the North. The work has only been going on for two or three years, and it takes a long time to get the shippers and the railroads and the handlers educated. We think we have made a great deal of progress during the year.

Mr. McKINLEY. Do you find from experience that there is more economy in having the shipments made by the big concerns like the packers than by the little concerns?

Dr. ALSBERG. That depends upon what you mean by little and what you mean by the big packers. Our experience is that the best results are obtained when the shipment is in carload lots. We have no reason to believe that a man who ships a train load necessarily does it more economically than a man who ships a carload or so a week. It is somewhat more economical and the product keeps better if you ship a whole car that is iced at regular intervals, goes right straight through and does not have to be transshipped. The doors of the car are kept closed. It is better to ship in that way than if you ship a few barrels now and then.

Mr. McKINLEY. The Booth Fish Co. ships from the Pacific coast?

Dr. ALSBERG. I believe so.

Mr. McKINLEY. Do they ship by this sloshing method?

Dr. ALSBERG. No; they ship dry. Their method is to take the halibut and freeze it solid.

Mr. McKINLEY. That method is more economical and is better?

Dr. ALSBERG. Oh, yes; and we are trying to get everybody to do it by the dry method.

Mr. HAUGEN. That can be done only when shipping in carload lots?

Dr. ALSBERG. Not necessarily. Dry shipping is best done in carload lots. You can not ship as easily otherwise.

Mr. HAUGEN. If you ship it in smaller lots, wouldn't it thaw out in shipment?

Dr. ALSBERG. Yes; but if you can freeze it solid before you ship it, you can ship it quite a considerable distance, four or five hundred miles, in smaller lots. However, it is not so economical; you will have an occasional shipment come back.

(Thereupon, at 12.14 o'clock p. m., a recess was taken until 2 o'clock p. m.)

AFTER RECESS.

The committee reconvened at 2 o'clock p. m., pursuant to recess.

STATEMENT OF DR. C. L. ALSBERG, CHIEF OF THE BUREAU OF CHEMISTRY, UNITED STATES DEPARTMENT OF AGRICULTURE—Continued.

The CHAIRMAN. Dr. Alsberg, will you continue by discussing item 62, on page 110 of the Book of Estimates, for investigating the packing, handling, storing, and shipping of oysters and other shellfish in the United States?

Dr. ALSBERG. There is nothing under the new work essential to report in that connection. It is work that is being done in cooperation with the Public Health Service. We assist in handling the chemical end of the sanitary survey of the oyster beds of the United States. We also carry on investigations to determine how oysters that grow in polluted waters may be treated so as to be made fit for food. Such a method is to transplant them into waters that are not polluted. We have made a series of experiments upon methods of transplanting to show how long the oysters must be kept in unpolluted water in order to be safe to eat, and how to pack oysters so that they may not become polluted again after they have been taken out of the shell. That work has been going on for some time, and it will take some time longer to cover the entire field.

The CHAIRMAN. What is the nature of the work your bureau is doing as distinguished from the work of the Public Health Service?

Dr. ALSBERG. The work of the Public Health Service consists of making sanitary surveys of the areas where oysters grow and of the sewage and other pollution that may go into the water, so as to determine what particular areas of oyster beds are safe and what are not, and to make recommendations to local authorities concerning sewage disposal and matters of that kind. On our side, we have to do with the handling of the oysters after they are taken up and not with the sanitary conditions of the oyster beds.

The CHAIRMAN. I see.

Dr. ALSBERG. The two things dovetail right into each other and we are all working together. The Public Health Service has spent much larger sums than we have.

The CHAIRMAN. There is no duplication of work?

Dr. ALSBERG. No; there is no duplication of work. We are working together.

The CHAIRMAN. Any questions? If not, take up item 64, for the study and improvement of methods of utilizing by-products of citrus fruits, etc., \$13,000.

Dr. ALSBERG. That work has been done in California and in Florida, and now some work is being done in Porto Rico. The work consists of efforts to devise methods for the utilization of cull oranges and lemons that can not otherwise be marketed. There are two important projects. One is the manufacture of citric acid from lemons and the other is the manufacture of lemon oil, which is an expensive and valuable oil, of which our supply is now imported, in the main, from Sicily. The method of making citric acid has been perfected and the product is now being produced commercially from cull lemons. The method of producing lemon oil has not yet been completely perfected, although there is already some commercial production of this article. The problem is this: In Italy the oil is produced by hand labor, but, on account of the higher wages and labor conditions in this country, in order to make it a commercial success we have to devise some mechanical process for it. We have not yet completely perfected such a process.

Then there are some minor methods of using cull oranges and lemons, such as the manufacture of orange peel for the confectioner, the manufacture of marmalades, jams, and preserves from oranges and lemons, and the like. In both lines we have succeeded in establishing the manufacture of these products and have also established a sort of exchange to bring purchasers and producers together. There has really been some progress made in the commercial production of these articles. We have been assisting in this work to a considerable extent. War conditions have stimulated the industry.

The CHAIRMAN. What about item 63? It comes before item 64.

Dr. ALSBERG. Item No. 63 is the one under which we have been studying, as I explained last year, the proteins and nitrogenous constituents of various agriculturally and commercially important seeds. We have studied under this the proteins of kafir corn and of the peanut, and now we are adding work on the protein of the velvet bean. It so happens that the proteins of the different seeds have not all the same food value. It used to be thought that one protein was about as good as another, in proportion to the amount of nitrogen it contained. We know now that that is not the case. The way to determine the value of the proteins is to isolate them chemically and study their nature and on the basis of that information to perform certain nutrition experiments in the laboratory. In connection with this work we have had some interesting results. We have found, for instance, that the protein of kafir is better than the protein of corn, and the difference thus discovered led to some new studies about putting together a balanced ration, particularly where we used grain sorghum instead of corn. There are experiments now under way which may make it possible to feed with grain sorghum in such manner that this will be at least equal to corn if the feed is properly balanced. We found also that the protein of the peanut is as good as, and probably better than, the proteins of ordinary legumes, like the cowpea, we will say, and that the food value of the peanut is very much greater than we had supposed. We have to change, in the ration containing peanuts, our combination of

ingredients if we want to get the best possible results. We hope to get similar information about the velvet bean.

Our investigations so far have been with relation to the chemical structures of these important foodstuffs, but they will also in the future be directed to securing a better method of utilizing them in feeding.

The CHAIRMAN. Are there any questions? If not, we will pass to item 65, for investigation and experiment in the utilization, for coloring purposes, of raw materials grown or produced in the United States. Suppose you discuss what progress you have made in connection with your color work and give us the reason for your new language.

Dr. ALSBERG. We have made, I think, in the two years that this appropriation has been available very important progress. We have developed a new method for the production of the substance known as phthalic anhydride. This substance is the basis of one of the methods of making indigo. It is the basis of phenolphthalein, which is one of the most widely used laxatives. It is the basis of numerous and important series of dyes. In fact, it is one of the most important of all the intermediates. It is itself not a dye, but is converted into many useful dyestuffs of the series. I estimate that the annual consumption of phthalic anhydride, were it available in this country, would be something in the neighborhood of 5,000,000 pounds. We have developed a new method, which is now in commercial use actually producing this material, which, we feel, is capable of producing phthalic anhydride here more cheaply than anywhere else.

The CHAIRMAN. Anywhere in the world?

Dr. ALSBERG. Anywhere in the world. But I must make this reservation: We do not know just exactly what is going on inside of German dyestuff factories, or what has been going on. It may be that they have a secret method of which we know nothing which is as good as ours or better. As far as we know, however, that is not the case. So far as we can judge from the price that was paid for the material before the war, we believe that this particular method for making this very important intermediate is capable of producing it very much more cheaply than any other method that we know anything about.

Now, this particular method, which is no longer a laboratory method—it is actually being used—will be a very valuable contribution now and after the war in enabling our dyestuff manufacturers to maintain themselves in the face of international competition. What I have said, of course, does not necessarily mean that they can maintain themselves on the basis that obtained before the war. The price was 20 to 30 cents before the war, whereas now it is over \$4 a pound. We do believe that this method is able to compete, not with \$4 phthalic anhydride, but with 20-cent phthalic anhydride, which was about the price before the war. As I have said before, this is no longer a laboratory proposition.

Would you be interested, Mr. Chairman, in knowing about the production of this substance?

The CHAIRMAN. Yes.

Dr. ALSBERG. We are not manufacturing. Commercial concerns are manufacturing it. What we did was to develop this method and then applied for patents upon it. These patents have not been issued. Is that correct, Dr. Gibbs?

Dr. GIBBS. The patents are allowed, but have not actually been issued.

Dr. ALSBERG. They have been granted but not actually issued.

The question arose as to how to make this information available to the industry without discrimination. We advertised that we had a new method and that we would be glad to cooperate with anybody that wanted our assistance. We received some 70 replies to this statement, which was published in the press. With these before us, we had the Solicitor of the department draw up a contract, which gave the Government everything except money for the use of the patents; that is to say, they had to permit our men to go into the plant and keep us in touch with what they were doing; in other words, to lay all their cards on the table, so that we would know immediately of any improvements or anything they did. The result was that only two concerns were willing to enter into that kind of contract with the Government. Seventy had an opportunity to do so. With these two we have been cooperating. There were some great engineering difficulties in changing from the laboratory to the commercial scale of production, but they have now very largely been overcome.

Is there anything further you would like to know on this particular subject?

The CHAIRMAN. I think you have covered the subject rather fully.

Dr. ALSBERG. If you are interested, here is some of the material which was made at these commercial plants.

Mr. OVERMYER. Are the plants which are now producing on a commercial scale doing so with profit to themselves, do you know?

Dr. ALSBERG. This particular plant has been running intermittently only a couple of weeks. All we would have to judge by would be the fact that the plant has spent a great many thousands of dollars in enlarging their facilities, which would show that the management is convinced that, from the showing we have made, the method is going to be a paying one. They spent between \$25,000 and \$30,000 in development work before they overcame the engineering difficulties involved, and now they are going to spend a great deal more money in enlarging their facilities.

These patents have been applied for, but not yet issued, because we did not want the matter to come to the general public before we were ready for it.

Then we have another matter, which is of fundamental importance to the dyestuff industry, namely, chlortoluene. Toluene is the basis of trinitrotoluol, or T. N. T., the very important explosive about which you have heard so much recently.

On this we have a copy of the patent here, which may interest you. [Exhibiting.]

This covers the method of producing chlortoluene from toluene, which is obtained from coal tar. Chlortoluene is not a dyestuff but is converted into benzaldehyde, the basis of a whole series of dyestuffs. All these dyestuffs come in series. You get a whole line of them from one substance, which forms their basis. Benzalde-

hyde is the basis of one series. To this series belongs malachite green, of which we used before the war 400,000 pounds a year. By improving the method of producing this basic substance from which these dyes are made, we hope to increase the production and improve the process for the manufacture of the benzaldehyde dyes in this country.

These are the actual things we have accomplished. One is being demonstrated to the industry now; the other is being used by the industry.

There are other features of our work which it is perhaps not worth while to discuss too much, because it is better to talk about what one has done than about what is merely hoped for. One that has gone far enough to discuss is this: We have under way a method of making dyestuffs from one of the ingredients of sulphite liquors that are wasted at present in the manufacture of pulp. These substances are very similar to certain coal-tar derivatives, and we have made from them dyestuffs which are entirely new—never known before in most cases. We believe they have value. If that hope is well founded, we will be able to create a new series of dyes and a new industry founded on what was a waste product of agriculture. We make most of the pulp here and in Canada.

We also have work under way which gives promise of a method of utilizing some of the low-grade resins produced in this country as raw material for the manufacture of some of these substances similar to coal-tar products.

We have thought that as we have some practical results to show we would be justified in coming here and asking for an increase in our appropriation, for, while I can not say to you that we want this \$25,000 for this or that specific purpose, because there are a greater number of things we want it for. I feel that the bureau will be able to do more work of the type we have completed and of the type we have under way if we have this additional money. Beyond that, the specific reason for asking for the increase is that we have had less money than we expected to have because of the enormous increase in the cost of building materials. We estimated that it would cost \$10,000 to \$11,000 to put up a little building for work on a commercial scale at Arlington Farm. As a matter of fact, by the time the money became available we found that this building could not be constructed for that amount; we could put up only a part of it and buy only a part of the equipment necessary for it. Unless this additional appropriation is provided the work, which is yielding good results, will have to suffer, because we will have to take a certain proportion of the money which has been appropriated and use it to complete the equipment in this little experimental factory.

The CHAIRMAN. When did you complete your laboratory over there at Arlington Farm?

Dr. ALSBERG. It is not completed. It is still under construction.

The CHAIRMAN. You have it only partly completed?

Dr. ALSBERG. Yes.

The CHAIRMAN. And this extra money is to complete the laboratory and complete the equipment?

Dr. ALSBERG. Yes. Only a part of it, very little of it, has been completed. The work that is now in progress contemplates the completion of part of it. There have been delays of all kinds in getting

equipment, workmen, materials, and so on. While the contracts were let, some last year and some this year, the work has not been completed, and none is actually finished. All the contracts have been let to finish part of it.

The CHAIRMAN. You have some new language there, as follows: "In cooperation with such persons, associations, or corporations as may be found necessary." What is that for?

Dr. ALSBERG. The idea of that is to secure the specific sanction of Congress to do work in cooperation with the industry. Some of it we have already done. We felt that perhaps we were exceeding the authority given us, and we wanted to ask specific authority. It is perhaps peculiar to ask authority for something you have already done, but we feel that we wanted the sanction of this committee and of Congress for entering into the kind of cooperation with commercial concerns such as I outlined a few minutes ago. We have felt that Congress intended under this appropriation to give us that kind of authority or else there would not have been any sense in making the appropriation, but we wanted it specific and definite, so that if we are wrong in cooperating in the way we have we might be told so. We want to be told that it is all right to go ahead as we have done.

The CHAIRMAN. You do not need the authority. You have that. You simply want the sanction?

Dr. ALSBERG. Just the sanction?

The CHAIRMAN. Any questions? Doctor, do you think your work so far gives an indication that this country may become self-sustaining in this dyestuffs industry within a short while?

Dr. ALSBERG. I would not say that the investigations of the Bureau of Chemistry indicate that. I should say that our work and the work of dyestuff chemists the world over indicate that we have more than a very good chance to become self-sustaining ultimately. Of course it is dangerous to make predictions of that kind when you are talking about matters which are subject to international competition. We are in the dark in figuring on costs. For example, Germany may have sold a given dye for \$1.50 a pound. That does not mean that it cost \$1 or \$1.25 to produce that dye; it may have cost but 2 cents to produce it, and the \$1.48 may have been profit and velvet. I think, however, that the indications to-day are that we have a very good chance in this country—a better chance than any other country outside of Germany—of becoming the chief factor in the dyestuff industry. Isn't that true, Dr. Gibbs?

Dr. GIBBS. Yes.

Dr. ALSBERG. One thing is true, and that is this: The industry for certain dyes—as, for example, the sulphur black series, in which we have done no work, because not necessary—has come to the United States to stay, and the Germans are recognizing that. That is the most important of the black-hosiery dyes, and the black dyes are the most important of all. Next, of course, comes the blues of the indigo series. We are to-day, as I understand it, exporting much the world's demand of sulphur black dyes.

The CHAIRMAN. Has this come about under this appropriation?

Dr. ALSBERG. No; it had nothing to do with this.

We hope under this work to do the same thing for some of the other series of dyes, but we have been at it only one and one-half years,

and only one of the processes has been developed to the point where it is a commercial success.

The CHAIRMAN. I think you are to be congratulated, Doctor, upon your progress in this work. The next is item 66.

Dr. ALSBERG. Item 66 is for the investigation and development of methods for the manufacture of table sirup.

The CHAIRMAN. Yes.

Dr. ALSBERG. I can report some progress on that. I made a fairly full report to this committee last year. You will recall that the cane-sirup industry of the South has the greatest difficulty in producing a commercial article, because of its inability to put out a uniform product. As business is done to-day, unless you can deliver to the consumer an article of uniform quality and appearance, you are practically out of business. That has been the situation with the cane-sirup industry. The sirup is made from sugar cane grown in southern Georgia, southeastern Alabama, and northern Florida. The farmers have not been able to produce every season, at all times, a uniform product, because of the fact that if they boil it down too far it crystalizes out and "sugars off." If, on the other hand, it is not boiled down for enough it ferments. We have boiled down cane sirup to the consistency of honey without having it either crystalize out or ferment out, and therefore it is possible to produce a more uniform product.

There is another difficulty to be solved which confronts the sirup manufacturers. This is the difficulty of getting water-clear or what the trade calls bright sirup. To overcome that difficulty special methods of clarifying must be developed. This has been the main new work. I can not report final results for the reason that sirup is produced late in the year, and the work is now in progress. We feel that we have made progress in it. We have done a certain amount of demonstrating to farmers and producers of improved methods of producing sirup. There was produced last year some two or three hundred barrels of sirup, which we wanted the farmers to sell in the New Orleans market, as we had a price of 10 cents a gallon better than the best price for that class of sirup at that time; but when we tried to do it there was none left to market, because the neighbors had liked the sirup so well that it had all been sold in the neighborhood. We have expected, and hope, that several thousand barrels of sirup will be produced by this method this season.

The CHAIRMAN. The next item is 67. What is that for?

Mr. ALSBERG. That is for the enforcement of the food and drugs act. I do not know how much you want to hear about that. I could talk a long time about it.

The CHAIRMAN. I think you should tell us something about the prosecutions and the administration of the law generally.

Dr. ALSBERG. There are two features of the law, one dealing with imported and the other with domestic products. The importation feature has been different from what it has been in ordinary times. The difference has been greater than in the case of the domestic feature. The difference is very curious. There has been much less food imported into the United States during the last year than in normal times. It might seem that that would mean much less

work for the bureau in controlling the food brought in. As a matter of fact there has been more work, because the American importer has been shut off from his customary sources. We have to deal directly with the tropical and oriental countries in most instances. Take spices. Our American importers bought their spices in London and Liverpool and Amsterdam, and not in Singapore, Zanzibar, Ceylon, and Calcutta. They can not get the spices from those places now. The result is that our importers have had to establish direct relations with these less civilized sections of the globe. That has led to the fact that these people, knowing that they were dealing with new customers, have been trying to put things over on them. The result is that the quality of spices has been much inferior than in ordinary times. Take mustards, German and Russian mustards are no longer on the market. Our spice grinders have had to go all over the world to find spices. Each time a new mustard seed comes in it means a pretty careful study to find out whether it is really mustard or is, in fact, a turnip seed, a rape seed, or a cabbage seed, because immense quantities of these, which belong to the same family as the mustard, are passed off as mustard, when, as a matter of fact, they have little mustard quality.

In the same way, take the bean situation. Last year the ordinary Michigan bean was sometimes sold as high as \$13 a bushel. Naturally everybody that wanted beans looked for new types. The importers of foodstuffs cabled all over the world, wherever beans are grown, and brought in all kinds of material. Some were good beans and some belonged to the type of beans that have prussic acid in them. So we have to examine scores of beans that have never been seen in the United States before. That is an example of the change that has taken place in import work.

Now for the domestic work. The pressure of war and the high price of living are not yet so great that they have produced a very unusual increase in adulterations and substitutions. They are beginning to appear, however. We have had trouble, for example, with so-called egg powders, which have no egg in them at all—nothing but colored corn starch. We have made about the same number of prosecutions as before—between 1,000 and 1,200 cases during the year.

To make a case to-day is becoming steadily more difficult. It used to be, six or seven years ago, you could walk into any jobber's and glance casually around the shelves and pick up half a dozen violations of the law, enough to keep a laboratory busy for several weeks. That time has gone by. Adulteration is now done in such a manner that it takes a very great deal of skillful work to detect it. This causes, I think, a great deal more work than it used to.

We have been fairly successful in the courts in prosecutions. We have very few cases in which the Government does not prevail. We have had a good many prosecutions under the Sherley amendment to the law, which is the one that applies to falsified labels on patent medicines, and we have been successful in most of the prosecutions. There have been four or five cases against nostrums during the year in which we have not prevailed—we think because of local conditions.

The CHAIRMAN. Any question, gentlemen, on this item? If not, take up item 68, for investigating the grading, weighing, handling, and transportation of naval stores, the preparation of definite type

samples thereof, and for the demonstration of improved methods or processes of preparing naval stores.

Dr. ALSBERG. That work is designed to assist the industry in standardizing its product and improving its method of producing rosin and turpentine. If we can get everybody to distill their gum by reliable and proper methods, the value of the output would be from three to four millions dollars greater than it is. It is no more difficult or expensive to make light-colored rosin than black rosin, if you only know how and take the trouble. We know how—by which I do not mean that we have invented anything that is especially new, because half a dozen of the high-grade producers use the same methods we do; but if they all did, there would be no low-grade rosin on the market.

The bulk of this work last year consisted in having a number of men out in the field among the turpentine stills and producers, talking to them and demonstrating to them and showing to them how to improve the quality and value of their rosin. As a result of that work, it has happened that the rosin producers of a section of the country have organized themselves into an association. They took one of our men and made him their secretary. While to a certain extent that handicapped the work of the bureau, it means that these people, or this association, will help in improving conditions in the industry. As a large percentage of the production is ordinarily exported, and as it can not be exported now, the industry is suffering from overproduction. It is also suffering from the unfair competition that results from the adulteration of turpentine. We have carefully studied many samples of turpentine collected in many localities, and we have found that 20 to 25 per cent of the samples are adulterated with mineral oil. It is probable that this condition can not be remedied by the industry itself, because a great deal of the adulteration is not done by the producers. The bulk of it is done away from the turpentine still by somebody further down the line before it gets to the consumer. There is, of course, a good deal of indignation on the part of the industry concerning that condition, and the industry is constantly appealing to us to remedy it, which we have no power to do.

The CHAIRMAN. Have you given any consideration to a bill introduced by Mr. Harrison of Mississippi?

Dr. ALSBERG. I have not seen that bill. Has it been introduced in this term?

The CHAIRMAN. Yes.

Dr. ALSBERG. I have not seen any bill that has been introduced at this term. I have seen a number of drafts of bills that it was proposed to introduce at the last session of Congress, but the industry felt that at the last session Congress had more important matters and so held up the bill.

The CHAIRMAN. I expect I am wrong about this matter. Probably it is one of the proposed bills that were to have been introduced. I am not sure that it has been introduced.

Dr. ALSBERG. The point on that is this: The industry is very anxious to have legislation which will prevent the adulteration of rosin and turpentine. There has been something in the situation analogous to what you gentlemen are familiar with in the case of

grains. The product has been graded down to the producer and graded up to the consumer in some instances, the grading being according to market conditions—sometimes a grade high if there was any advantage in that and sometimes a grade low when there was advantage in that. That is something that you gentlemen are familiar with in the grain industry, and for similar reasons this industry wishes legislation of the type that has remedied the abuse in the grain industry. They do not want it like the food and drugs act, because they feel that it can be handled without the prosecution features.

The CHAIRMAN. The next item, No. 69, is for the investigation and development of methods of manufacturing insecticides and fungicides, and for investigating chemical problems relating to the composition, action, and application of insecticides and fungicides, \$25,000.

Dr. ALSBERG. That is for extending and carrying on upon a larger scale—on a scale which we think is warranted—the work that is now being done on a small scale under the appropriation for agricultural investigations, item 57. We are carrying on a small amount of work on this subject. I can perhaps best illustrate the type of work we want to carry on by explaining what we are already doing in this line. Take the question of Bordeaux spray. You gentlemen are familiar with its composition. It is prepared from copper. It is a vitally essential spray and is used for spraying fruits particularly. Enormous quantities are used. It is so very important that certain fruit industries could not exist without Bordeaux spray. Now, Bordeaux spray has been developed in the main by the trial-and-failure method—by rule-of-thumb methods. Nobody has carried on any rigid investigations, except, perhaps, in England. To reduce the amount of copper which is used in Bordeaux spray, or to substitute in part for it something that is cheaper, would mean a very materially reduced cost of the spray, particularly now, or at least a little while ago, before the Government fixed a price for copper.

The CHAIRMAN. I see.

Dr. ALSBERG. The price of blue vitriol or copper sulphate, from which this spray is made, is very high.

We have all used Paris green. Later lead arsenate was developed, which for some purposes is better than Paris green. Nobody has made a systematic study of all the compounds of arsenic that might be useful in spraying, and the chances are very good that such a systematic study would lead either to the development of cheaper sprays, because the constituent elements are cheaper, or to sprays that are more effective than the sprays we have now, which comes to the same thing.

Take the question of nicotine, which is used as an insecticide for a good many purposes. We have to use nicotine in insecticides because it is available. There are hundreds of compounds known to chemists which very closely resemble nicotine in chemical and toxic processes. Some can be made by processes similar to those by which dyestuffs are made. A systematic study of these compounds might develop something that would be cheaper and more effective, perhaps, than nicotine.

Take the lime-sulphur compound. No one has made a systematic study of the best conditions of preparing lime sulphur. It should be possible to improve them.

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF CHEMISTRY—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
AGRICULTURAL CHEMICAL INVESTIGATIONS—Continued.		
Much valuable data have been obtained regarding the effect of variations in seed, climate, and soil on the chemical composition of varieties of wheat and grain sorghums. Information has been obtained as to the effect on the growth and composition of crops by the application of various constituents of fertilizers at different stages of the crop's growth.		
<i>Leather and tanning investigations</i>	\$6,600	\$6,600
Experiments are conducted to determine what effect variations in the composition of leather and in the tanning materials have on the wearing qualities of leather.		
Methods for determining the composition of leather and of testing its wearing qualities are being worked out. Special attention is given to the wearing qualities of sole leather and of sole leather substitutes. Data have been secured that are useful in selecting leathers best suited for specific purposes. This work is proving of great value to the War Department in making specifications for shoes for soldiers. Additional experimental work is being conducted along this line. Assistance has been rendered tanners in disposing of tannery wastes. Methods have been developed by which certain tannery wastes, which were not only a loss but in many cases a nuisance because of their pollution of streams, have been utilized profitably as fertilizer. Methods of tanning leather on a small scale are being perfected for the use of the farmer and small tradesman. Deterioration of bookbinding and other light leathers have been studied and specifications worked out for better qualities of such leathers.		
<i>Paper investigations</i>	1,015	1,015
Experiments are conducted to develop accurate methods for testing papers so as to determine how long the paper will last and for what purposes it is best suited.		
Data have been secured which are valuable in drawing specifications for paper for specific purposes. The specifications for paper for the Federal Government, for many State governments, and for a large number of libraries and other public institutions are based upon the results of this work. Manufacturers are shown how to produce most economically papers for specific purposes. By showing that in many cases light-weight paper can be made to serve better than heavier paper, economies in the use of paper-making materials have been effected. Assistance has been rendered the Treasury Department in selecting distinctive paper for currency. Cheaper methods for making blue-print paper have been worked out.		
<i>Wood distillation products</i>	2,200	2,200
Experiments to improve methods and apparatus used in wood distillation, shorten the time of distillation, promote the utilization of waste wood, and encourage the production of marketable articles not heretofore recovered from wastes.		
Special attention has been given to the composition of wood turpentine and its use as a varnish and paint thinner. Methods of analysis of wood products are being worked out and data secured that aids in production and in the preparation of specifications.		
<i>Preserving fabrics</i>	3,300	3,300
To give farmers and others effective and cheap methods of waterproofing and mildewproofing fabrics for wagon covers, tents, tarpaulins, and for other uses.		
Simple and inexpensive methods which are applicable to farm use have been developed for both waterproofing and mildewproofing in one operation. This work is being done in cooperation with manufacturers of fabrics. Started as a project primarily for the benefit of the farmer, it has developed information that is of great value to the War Department in purchasing waterproofed and mildewproofed fabrics for military uses.		
<i>Carbohydrate investigations</i>	2,500	2,500
To improve methods of manufacturing sorghum sirup so as to obtain a clearer and brighter sirup which will keep indefinitely without fermenting or crystallizing.		
A superior sorghum sirup was made by heating the juice nearly to boiling, allowing it to settle, and then boiling the supernatant juice to the right consistency. By adding an extract of ground malt to the juice and allowing it to stand some time before boiling, a clearer sirup was obtained.		
<i>Insecticide and fungicide investigations</i>	2,950	2,950
To investigate the toxic effects of sprays on fruit trees through the medium of the soil, and to determine foliage injury by lead arsenate and other insecticides.		
Many data have been collected in order to determine whether or not orchards can be injured by poisonous sprays acting through the medium of the soil and, if so, under what conditions this occurs and how to remedy it. Studies are under way to discover spray mixtures which, while acting in an efficient manner as insecticides, will produce a minimum injury to tender foliage.		

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SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF CHEMISTRY—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
POULTRY AND EGG INVESTIGATIONS—Continued.		
shipping eggs so as to greatly reduce the amount of breakage. A poultry and egg demonstration car is sent into poultry-producing sections. Many meetings and demonstrations have been held to explain the construction and operation of egg-packing plants and proper methods of packing eggs in cars for shipment. The accuracy and economy of packing-house methods of chilling and dressing poultry and chilling and grading eggs have been greatly improved. These investigations have developed new data in reference to the whole problem of picking, packing, storing, handling, and shipping poultry and eggs. The demand for extension work in the best methods of handling poultry and eggs has been greatly increased during the past year because of the urgent need of conserving all food products.		
FISH INVESTIGATIONS.		
Studies are made of the present practice of handling fish for freezer storage, with a view to the prevention of loss through deterioration, and to make chemical analyses of all available food fishes to determine their food value and variation in composition; to investigate the utilization of fish waste products, and new foods from fish, shellfish, and their commercial products. Extensive experiments involving long periods of freezer storage of fish treated in various commercial ways are in progress. Field and laboratory studies are being made of the commercial methods of handling and transporting fish. Improved methods for handling shrimps have been introduced to the industry with good results. Much valuable information has been secured as to the food value of various fish. Data have been obtained preliminary to the conduct of work on the properties and value of salmon oils for industrial uses. Improvement has been made in methods of handling and shipping fish.		
	\$14,000	\$14,000
OYSTER AND SHELLFISH INVESTIGATIONS.		
Investigations are made of the handling, marketing, and shipping of oysters, with special reference to the detention and removal of pollution. This work is done in cooperation with the Public Health Service; it in no way duplicates the work which they do in reference to the sanitary survey of oyster beds but supplements that work. As a result of this work, it has been found that polluted oysters will cleanse themselves in a very short time if transplanted to unpolluted water. Improved methods for handling oysters have been recommended to the industry. Continued work to insure the freeing from pollution of all oysters placed upon the market is necessary.		
	5,000	5,
BIOLOGICAL INVESTIGATIONS OF FOOD AND DRUG PRODUCTS.		
Investigations are made to determine the chemical composition of proteins as a basis for ascertaining their food values; to determine the hitherto unknown nitrogenous constituents of seeds and plants; to ascertain what seeds and plants contain compounds which might be used to supplement the deficiency of other foods; to develop methods for the analysis of proteins and to test the nutritive value of proteins by means of feeding experiments. Valuable data have been collected on the proteins of the jack bean, kafir, and peanut. The proteins of the peanut have been found to possess especially valuable compounds in the production of growth. The chemical analysis of the proteins of the peanut indicate that peanut press cake can be used to supplement diets of corn or wheat, since the latter cereals are deficient in lysine, which is found in the proteins of the peanut. Feeding experiments with peanut meal have been studied in cooperation with the Bureau of Animal Industry. Studies will be extended to include the proteins of other foods and feeding stuffs.		
	15,000	1
CITRUS BY-PRODUCTS INVESTIGATIONS.		
<i>Utilization of cull citrus fruits</i>		
Experiments have been made to devise commercial methods for the utilization of cull oranges and lemons. Work on the manufacture of citrate of lime has been completed. Both the quantity and quality of the product have been increased and bettered as a result of the application of methods developed through these investigations. Much work has been done on the manufacture of citric acid. Work on the elimination of heavy metals and the search for resistant alloys is in progress. Experiments are being made with devices for the extraction of essential oils. Improved methods for handling citrus fruit juices have been developed. Special attention will be given during the coming year to methods for manufacturing citric acid.		
	13,000	
<i>Investigation of maturity of fruits and vegetables</i>		
Chemical investigations are being made of the composition of fruits of varying degrees of maturity, in order to develop methods for determining at what stage fruits should be picked and shipped to market. Valuable data in reference to tests for the maturity of oranges have been secured. This work will be extended to other fruits during the next year.		
	5,500	
	7,500	

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF CHEMISTRY -Continued

Appropriations and activities	Allotment (lump fund,	
	1918	1919
LABOR INVESTIGATIONS..	\$49,400	\$70,720
Investigations are under way to develop new and cheaper methods for manufacturing dyes.		
A new chemical process for the manufacture of phthalic anhydride, which is one of the most valuable compounds in the manufacture of dyes, has been devised. This compound has not been manufactured in this country until recently, and never in any great amount. The process which has been devised is now being tested upon a large scale and promises to be the most economical process which has ever been used for this purpose. A new and valuable method for the production of chlor derivatives has been devised, and this process has been tried upon a large scale, the result showing that the process is extremely practicable and produces some very valuable compounds which are used in the dye industry in a very economical manner. A process for the manufacture of indigo has been investigated. This dye is ordinarily consumed in this country at a quantity between 9 and 10 million pounds per annum. It is believed that these investigations will result in the economical production of indigo in this country at such a price as will enable it to compete with foreign manufacturers. A number of products which are either waste products of agriculture, or products of agricultural origin, obtainable in large quantities at a very low price, are being studied with the idea of making them into useful compounds of a chemical nature which can be used in the manufacture of dyes or substances from which dyes are produced. Investigations in reference to other substances used in dyes are under way, and an experimental plant is being constructed at Arlington Farm to try out the methods worked out in the laboratory. Owing to the extremely high cost of building material, apparatus, equipment and raw material, it will be necessary to ask for an increase in this item in order that the investigations now under way can be carried on during the next fiscal year as originally planned. The results already obtained indicate that great improvement will be made in methods for the economical manufacture of dyes.		

TABLE-SHOP INVESTIGATIONS

Experiments are under way to develop improved methods for the manufacture of cane sirup, in order to produce a high-grade article which will not granulate or ferment. The influence of the various varieties of cane and the effect of their growth in different localities upon the color, composition, and quality of the sirup have been studied.

A method has been worked out in the laboratory by which a clear, light-colored sirup can be made by producers having a small factory equipment and progress has been made in the preparation of invertase in large quantities and the use of it in the manufacture of cane sirup. Extension work is now under way introducing improved methods among the manufacturers of cane sirup. It is proposed to continue this work during the next fiscal year.

ENFORCEMENT OF THE FOOD AND DRUGS ACT

Under the application of the two simple classifications may be made of the work under the food and drugs act: (1) Imported products (2) domestic products. The pervision of imported food and drugs is effected in cooperation with the Customs Division of the Treasury Department by the examination of shipments as they are offered for entry at customs ports. This work was in a manner, established prior to the enactment of the food and drugs act by authority of a special law passed in 1899. The work has steadily grown. While the quantity of goods actually imported since the war began is very much less than the quantity received in prewar times, the variety is greater. The usual producing markets in food products, particularly spices and in drug products especially crude drugs, to a large extent no longer exist, and in consequence importers have been required in the procurement of their supply to attempt purchases in sections that have hitherto not been regarded as producing points. This has actually increased the amount of work required by the bureau in maintaining satisfactory control. The standard is not nearly so high as it was before the war and in certain instances absolutely spurious stuff is offered as the genuine product. The importance of the detection and the prevention of the entry of such products into the country is recognized in the case of drugs.

is recognized in the case of drugs
the scarcity of both foods and drugs and the high prices which
particularly since the beginning of the war a far more important factor than
of our domestic output to an extent that has heretofore been
machinery for the enforcement of the law under the domestic
undergone radical changes. This was necessary because so much of the
which the trade itself underwent. Ten years ago, on account of the
adulterated or misbranded product could be tested quite easily
could be done with comparative small force. A few years
back products are not nearly so pure as they used to be. The
matter frequently of child health, so food inspection is
sometimes rather expensive, most nations. For that reason the ap-
the law relating to domestic trade has become more drastic. It
however, has been able to cope with this situation and so far it
mainwhile which the force has increased along specialized lines.

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF CHEMISTRY—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
ENFORCEMENT OF THE FOOD AND DRUGS ACT—Continued.		
obtained through the past year, in comparison with those obtained in previous years, considered in their relationship to the entire industry, are wholly satisfactory.		
On the basis of expenditure the administrative control may be divided into two primary classifications: (1) The expenditures incident to those operations of an investigative character, which are maintained within the bureau at Washington. In order to determine methods which may be adopted universally by the operating force of the field it is necessary to undertake and conduct frequently, and at considerable length, investigations of an intricate and of an involved nature. This requires the maintenance of laboratories specialized in certain classes of work. (2) The field force, strictly the police organization of the bureau, is engaged primarily in the procurement of the specific evidence required in the prosecution of cases. This force utilizes the information obtained and made available to them through the investigating or research laboratories of the bureau. There follows a statement dealing more specifically with these two classifications.		
<i>Food and drug control</i>	\$141,366	\$133,210
Reviewing cases, preparing correspondence, making analyses and checking analyses, and compiling data for court cases, for standards and for decisions; collaboration with State food, drug, dairy, and feeding-stuffs officials; compiling information regarding the food and drugs act.		
<i>Food investigations</i>	112,045	105,761
Chemical investigations to develop methods of analysis and to acquire knowledge of the composition of foods; to develop methods for detecting new forms of adulterations and to secure data regarding the composition of standard articles of food. The results of these investigations are used in guiding administrative officials in the enforcement of the food and drugs act.		
<i>Drug investigations</i>	25,440	25,440
Studies of the methods of analysis and of the composition of standard drugs, in order to detect adulterants and to guide administrative officials in the enforcement of the food and drugs act in its application to drugs.		
<i>Field food and drug inspection</i>	344,670	324,670
Collect samples, inspect factories, secure data bearing on food and drug industries, hold hearings, conduct correspondence, and make chemical and other analyses of food and drug products. This covers the strictly regulatory work in the enforcement of the food and drugs act.		
NAVAL STORES	10,000	10,000
Investigation of the grading, weighing, and handling of naval stores and the preparation of definite type samples for naval stores.		
Grading, weighing, and handling has been studied in the field and at points of production, distribution, and consumption. A simple and accurate method for grading at the still has been devised. Instructions on grading have been prepared, together with improved equipment therefor. Information on the uses of turpentine and rosin has been disseminated. Durable, accurate, and practical type samples for rosin have been prepared and distributed for preliminary practical experience and observations. Improved methods or processes of preparing naval stores are being demonstrated to the industry.		
INSECTICIDE AND FUNGICIDE INVESTIGATIONS		25,000
A new item is submitted to enable the department to investigate basic chemical problems relative to the composition of insecticides and fungicides and certain chemical problems relative to the method of action of insecticides and fungicides. Methods will be developed for making new insecticides and fungicides which will be cheaper and better than insecticides and fungicides already used for special purposes. On account of the scarcity and high price of certain materials which are now used in the manufacture of insecticides and fungicides, it is especially important at this time that new methods be developed and new raw materials discovered. It is proposed to give special attention to investigate the value of Bordeaux mixture prepared by new methods, so that a definite amount of copper will go many times further in killing fungi than the same amount of copper in Bordeaux prepared according to the present American method. Work will be undertaken to prepare and test the various arsenic sprays in a pure state and find out just how much arsenic in its various forms and just how much of the various pure arsenical insecticides are necessary to kill various kinds of insects.		

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

BUREAU OF ENTOMOLOGY

MONDAY JANUARY 7 1908



AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Monday, January 7, 1918.

BUREAU OF ENTOMOLOGY.

STATEMENT OF DR. L. O. HOWARD, CHIEF OF THE BUREAU OF ENTOMOLOGY, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Take up the question of your statutory salaries, Dr. Howard.

Dr. HOWARD. There is no increase in the total appropriation.

The CHAIRMAN. Have you any new places that do not take the place of clerks of lower grade?

Dr. HOWARD. There are, but those are to be filled by original appointments, and they do not comprehend increases in salary.

The CHAIRMAN. We will not discuss those statutory positions this afternoon.

Your next item, Doctor, is 35, in which you seem to have some new language, on page 123, as follows: "and demonstrating"; then, after "the results of such investigations," "independently and in cooperation with other branches of the department."

Dr. HOWARD. Let me make it perfectly plain that our cooperation with the States Relations Service will be comprehended by this wording. Under the present emergency we are doing a great deal of work with the Extension Service, and it is thought advisable to put in that language. May I say a word in support of Dr. Alsberg's remarks in connection with item 69?

The CHAIRMAN. Yes.

Dr. HOWARD. That is a very desirable appropriation. I am speaking of insecticides; I am not speaking of fungicides. There are a great many things that Dr. Alsberg has wanted to do, and that we have wanted him to do, but there were not enough funds. I think, in reply to a question just asked, that it is decidedly a war measure. I think Dr. Alsberg perhaps was a little too modest. We are focusing attention upon the insects that damage the great staple crops, and a great many of the insecticides are used in connection with the production of staple crops. He might accomplish, in the course of a year, something that would assist in this matter, on which will depend to a considerable extent the food supply, which is to be such an important factor in winning the war. This is why I say it is, in my opinion, a war measure.

The CHAIRMAN. Don't you have the authority now to do the co-operative work, and is that language absolutely necessary in order to give you authority to do the work?

Dr. HOWARD. No; it is not absolutely essential.

The CHAIRMAN. You are doing it anyhow?

Dr. HOWARD. Yes, sir.

The CHAIRMAN. You are merely asking the sanction of Congress and laying your hand on the table?

Dr. HOWARD. Yes, sir.

The CHAIRMAN. The objection to new language is that you always run to a point of order in discussions of that kind. It would be better to leave it out if it is possible to do so.

Dr. HOWARD. It was suggested by the solicitor.

The CHAIRMAN. We will look into that. Your next item is 36, "Investigation of insects affecting deciduous fruits, orchards, vineyards, and nuts, \$83,380." There is no change?

Dr. HOWARD. There is no change.

The CHAIRMAN. What have you done, and what do you intend to do with that appropriation?

Dr. HOWARD. One of the newly imported insects found is a peach-twig borer, which also works on the twigs of the cherry; and another one which we discovered in the last year, which occurs in parts of New Jersey, bids fair to be a very serious pest in the raising of grapes and roses. Those are two of our new subjects. The other main investigations have been carried on about as during the former years. We have carried on careful study of the habits of the principal fruit pests in different parts of the country, to see whether there are any variations which require measures to meet the varying conditions.

Mr. OVERMYER. The grape-berry moth work has been done under this section?

Dr. HOWARD. Yes.

Mr. OVERMYER. The reports of that work are very gratifying from all the people in my district. I have a letter which I have received from the Commercial Club of Sandusky, in which they state that from results actually obtained in 17 experiments where the spray devised by the bureau was used, there was an average increase of \$77.83 per acre over unsprayed parts in the same district. Taking into consideration the fact that there are over 6,700 acres of vineyards in this and the lake counties, it will be seen what this work will mean if it is continued, as I understand it will be.

Dr. HOWARD. That is the kind of testimony we have from many sources.

Mr. OVERMYER. I have had a great many letters giving good reports of the work.

Dr. HOWARD. There is one extension of the work which we will have to carry on this year, and that is the work on cranberry insects. It is proposed to extend our work into the Northwest, into the State of Washington, and it is hoped that we will have adequate funds to do this.

The CHAIRMAN. Any questions on that item, gentlemen? If not, take your next one, Dr. Howard.

Dr. HOWARD. Investigations of insects affecting cereal and forage crops, including special investigation of the Hessian fly and the

chinch bug. An intensive effort is being made looking toward control of the Hessian fly. We have established temporary field stations and experimental plots in a number of the grain-growing States, have entered into cooperation with the State entomologists, have put out circulars, and have also started planting experiments to determine the proper dates of planting. We have begun a crusade against the Hessian fly, looking for new methods and also working for the spread of the general knowledge of methods of destroying it.

The alfalfa weevil since last year has spread in the southern part of Idaho and over the mountains into Colorado. The weevil, however, is fairly well controlled by methods which we have introduced and by parasites brought in from Europe, which in some cases have destroyed 50 per cent of the weevils.

The CHAIRMAN. These started in Utah, didn't they?

Dr. HOWARD. Yes, sir. There is also the question of saving the clover-seed crop in Oregon. We have been investigating this matter and have sought a remedy through a variation in farm methods. Where insects affect grain and grass crops, it is sometimes a question of changing the old farming methods, so as to obviate the attack of the insects. That has helped in a great many instances.

The CHAIRMAN. Do you find it difficult to get the farmers to change their system?

Dr. HOWARD. Yes. But they are getting better about it. We are cooperating with the Office of Farm Management and with the State institutions, and we put it up to them to prove to the farmers that they can make the necessary changes to advantage in the general farming scheme.

Mr. McLAUGHLIN. Do you have experimental farm work carried on?

Dr. HOWARD. We have temporary field parties all over the United States.

Mr. McLAUGHLIN. And they follow these conditions?

Dr. HOWARD. Yes. We take the laboratory to the farm, rather than bring the problem to Washington. Take the case of the Hessian fly. We have kept a laboratory in Kansas, another in Indiana, and several others in different parts of the country, each one temporary, so it can be moved from one place to another very effectively. The men are, therefore, right at the center of things with their apparatus, and can study the problems right on the ground.

Mr. JACOWAY. After the Department of Agriculture has its scheme mapped out and you have found out what things are beneficial to the farmers, as a rule, how do the farmers respond to the recommendations made by the department?

Dr. HOWARD. As a whole, very well, and it is getting better every year. The department is gaining the respect of the farmers very rapidly. That is another advantage of having our agents all over the country. The reports show that the interest of the farmers is very great.

Mr. McLAUGHLIN. As to the Hessian fly, farmers have for a long time followed the plan of late seeding.

Dr. HOWARD. Yes.

Mr. McLAUGHLIN. And they have escaped serious damage. In some cases the damage done was comparatively slight. Has anything new been learned?

Dr. HOWARD. We have systematized the knowledge.

Mr. McLAUGHLIN. Then you haven't learned anything new? Your work consists of just giving currency to what you have learned?

Dr. HOWARD. We are making it very accurate for the various localities. You might say that, for example, it is safe to plant before or after a given date. That date could not hold everywhere. We are working on the theory of a general law, based on temperature and altitude, so that at given temperatures and given altitudes such and such date of planting is required. Those facts being known, the farmer will know the time to plant for his exact locality.

The CHAIRMAN. Any further questions? If not, take up item 38.

Dr. HOWARD. Another new insect that has been introduced is a new cornstalk borer. It has been discovered in the last year in the State of Massachusetts.

Mr. McLAUGHLIN. How did it get there?

Dr. HOWARD. It was probably imported from Europe in hemp.

Mr. McLAUGHLIN. After the quarantine was inaugurated?

Dr. HOWARD. Very likely; but there is no knowledge of when it was imported. It is very difficult to inspect hemp and that sort of thing.

Mr. McLAUGHLIN. You think it came in in ropes?

Dr. HOWARD. It came in the hemp.

Mr. McLAUGHLIN. With which the ropes were made?

Dr. HOWARD. Yes.

Mr. McLAUGHLIN. In what parts of the country is it found?

Dr. HOWARD. Only in Massachusetts and only over 100 square miles.

Mr. McLAUGHLIN. This is the first year you have seen it?

Dr. HOWARD. The first year.

Mr. McLAUGHLIN. Until you discovered these remedies against the alfalfa weevil, did the insects seem to be spreading, extending regularly and systematically, something like the boll weevil has done in the South?

Dr. HOWARD. Very much more slowly; not with anything like the rapidity of the boll weevil.

Mr. McLAUGHLIN. Alfalfa is a great crop in some parts of the country.

Dr. HOWARD. Yes. It is not at all likely that it will spread into Michigan.

Mr. McLAUGHLIN. Do you find any difference in irrigated and nonirrigated sections?

Dr. HOWARD. That region is practically all irrigated.

The CHAIRMAN. Anything further, Doctor?

Dr. HOWARD. No.

The CHAIRMAN. Take up item 38, investigation of insects affecting southern field crops.

Dr. HOWARD. The cotton-boll weevil has not spread so greatly as we feared might be the case. On account of the spring freeze last year the boundary of the northern spread was reduced and brought in to a very considerable extent, and then during the progress of succeeding generations this summer the insect filled up a large part of the gap, but the line will probably be brought down again by the severe weather this winter. The only northward spread has been in

the lower part of North Carolina, and then another southern spread in the Florida Peninsular, where cotton was not planted until recently. The people took up cotton planting in the hope of escaping the weevil, but the weevil has rapidly followed. The work done against the boll-weevil in the past year has been done largely in the States of Louisiana and Mississippi. They were rather sure that they had a method of late spraying with lead arsenate and calcium arsenate, done in a certain way, that would accomplish the desired results. Calcium arsenate was thought at first to be a cheap substitute, but since they began to use it intensively the price went up, and so it is about as expensive as arsenate of lead.

It is proposed during the coming summer to try this method over a much larger extent of country in order to find out whether it is applicable to all conditions of climate and soil; and if it is or is not, we will announce the full result, probably at the end of next season. It was considered inadvisable to announce it this year on account of the fact that the arsenic preparations are very scarce, very high priced, and very valuable for other purposes. If it were announced prematurely, they would buy the market up and raise the price, and it might not, under some conditions, prove satisfactory.

Mr. JACOWAY. What will it take to treat an acre of ground?

Dr. HOWARD. I have not the figures with me.

Mr. JACOWAY. Can you approximate it?

Dr. HOWARD. No. It is an economical process.

Mr. JACOWAY. I have heard it is something like \$2.50 an acre.

Dr. HOWARD. There is nothing further to announce, Mr. Chairman, under this head.

The CHAIRMAN. Have you anything on tobacco, rice, or sugar cane?

Dr. HOWARD. Nothing new; just an extension of the old work.

The CHAIRMAN. Any further questions? Doctor, you may take up the next item—39, relating to forest insects.

Dr. HOWARD. There is nothing of great importance to announce in the way of startling results this year, except that we have been able to secure the cooperation of the Forest Service and private owners in the bark-beetle control to an extent we have never been able to secure before and which will undoubtedly produce very striking results.

Mr. McLAUGHLIN. You have worked in an effort to control the bean diseases?

Dr. HOWARD. Yes, sir.

Mr. McLAUGHLIN. What progress have you made?

Dr. HOWARD. We have been working on the insects that carry the diseases that affect the bean, but have no results to announce at present. There was great damage to the bean crop in the northern and central part of the country, but the people working on it were of the opinion that it was due to the season. There is a great deal of water in the beans and peas. We were unable to determine whether there was any extensive work done by the insects or not.

The CHAIRMAN. Take up item 40.

Dr. HOWARD. The stored-products work has been carried on in a small way. No one man has devoted his entire attention to it. Just at the present time it is of enormous importance to get at the best method of controlling these insects.

Just before the Russian revolution the Government called all the entomologists together at Kief to discuss the damage to stored grain. There are 20 or 30 species that have the habit of feeding on stored grains.

Last month the British Government sent an expert entomologist to look into the question of damage by weevils to grain shipped from Australia to San Francisco to replace milled wheat sent by this country to England. He spent some time studying the question in this country before proceeding. This is a very important matter for careful investigation. We wish to go into it extensively—have a first-class man in charge, with assistants, and make extensive investigations in mills, in cars, etc., as well as in the laboratory.

Mr. McLAUGHLIN. Do you expect to hear from the Englishman?

Dr. HOWARD. Yes, sir.

Mr. McLAUGHLIN. Do you expect to extend your work in diseases of potatoes and beans?

Dr. HOWARD. We have not asked for any increase in the appropriation for that.

Mr. McLAUGHLIN. It is a very serious matter. I know by experience. I know just how extensive this disease has been. It has been awful in Michigan.

Dr. HOWARD. A certain amount has been allotted to the Bureau of Entomology under the food-production act, and about 40 field agents have been taken on. More men have been allotted for truck-crop insect work than for any other class of work under this bureau. We have regular experts in truck-crop insects in different parts of the country conducting investigations.

The CHAIRMAN. What amount of money are you devoting to this work?

Dr. HOWARD. I think it is \$125,000.

Mr. HARRISON. It is approximately \$145,000 altogether—\$30,000 for diseases of beans, peas, cabbage, etc.

Dr. HOWARD. That is for extension work.

Mr. HARRISON. Under the food-production act.

The CHAIRMAN. About how many men will you employ in this work?

Dr. HOWARD. At least seven or eight men, Mr. Chairman.

The CHAIRMAN. Any questions, gentlemen?

Mr. McLAUGHLIN. Will this appropriation you are asking for and the money which you will get from the food-production act be all you can reasonably use?

Dr. HOWARD. We are using——

Mr. McLAUGHLIN. I wish you would think that over very carefully, because I know there are millions of dollars of loss in our one State. The crop estimates issued by the department show a very large increased acreage in some of the States and decreased production. It is becoming a very serious matter.

The CHAIRMAN. In connection with beans, have you a really effective remedy?

Dr. HOWARD. There are remedies for all the insects which are efficacious if people would apply them systematically and intelligently.

The CHAIRMAN. It is largely a matter of extension work?

Dr. HOWARD. Yes.

Dr. HOWARD. No change in the wording, and no change in the amount.

The CHAIRMAN. Is there any change in the character of the work?

Dr. HOWARD. Nothing at all; it is the same work that has been going on during the past year.

The CHAIRMAN. Doctor, there is no conflict between you and the Public Health Service in the study of insects affecting the health of man and domestic animals?

Dr. HOWARD. Not so far as I can see. Our work supplements theirs in a way.

The CHAIRMAN. Any questions on that item, gentleman? If not, take up 45, "For general administrative expenses connected with the above lines of investigation," where you seem to have an increase of \$8,640.

Dr. HOWARD. That is very well explained in the note which follows. In connection with this extension work we are obliged to have a certain organization to take care of the insect-control work, and we haven't that money in the appropriation for miscellaneous expenses. This is apparently an increase of \$6,000, but in reality it is \$8,640 on account of certain transfers.

The CHAIRMAN. The \$6,000 would be for the purpose of creating this connecting machinery between your office and the States Relations Service?

Dr. HOWARD. Yes; and the rest is for necessary additional administrative expenses. Nothing further is to be said in explanation of it except that the work is growing.

The CHAIRMAN. Has the war increased the work in your office very much, Doctor?

Dr. HOWARD. It is increasing, both directly and indirectly, Mr. Lever. There are certain problems that we have been meeting as they came up, and we have had to employ a number more men. Of course the increase in extension work has caused an increase in the research work, and there has been a call for additional clerical assistance, and, of course, there has been the difficulty of getting additional clerks.

The CHAIRMAN. What class of work is included under your general administrative item?

Mr. HARRISON. General overhead expenses. I shall be glad to insert a more detailed statement which will deal with the question for the department as a whole.

(The statement referred to follows:)

ADMINISTRATIVE EXPENSES OF THE UNITED STATES DEPARTMENT OF AGRICULTURE.

Administrative expenses of the Department of Agriculture, as distinguished from expenses incurred under appropriations for the various bureaus, offices, and divisions of the department, include the salaries and travel expenses of all officials and employees of the Secretary's establishment, made up of the immediate office of the Secretary, the Assistant Secretary, the chief clerk, Disbursing Office, Office of Inspection, Office of Information, appointment clerk, file clerk, property clerk, mechanical superintendent, and the Office of the Solicitor, and, in general, miscellaneous expenses, such as the purchase of office furniture and equipment; typewriters, duplicating and adding machines, stationery, and other supplies; rent in the District of Columbia; ice, heat, light, and power for the group of buildings located in the Mall; telegraph, telephone, freight, and express service of the Secretary's establishment; feed of horses

beans and paid \$12 a bushel for the seed. I did not dare to take anything in that whole section of the country in which I live.

The CHAIRMAN. Were they immune from disease?

Mr. McLAUGHLIN. They were supposed to be, but they evidently took something as soon as they reached there, because the crop did not amount to much.

Mr. HAUGEN. Does the dissemination of this knowledge require expert knowledge?

Dr. HOWARD. No, sir.

Mr. HAUGEN. The States Relations Service would be able to give the knowledge?

Dr. HOWARD. Yes; they could do so. Of course, some of the county agents are better fitted than others.

The CHAIRMAN. Any further questions on that item, gentlemen? If not, we will take up the next, 41, "For investigation and demonstrations in bee culture," an increase of \$15,000.

Dr. HOWARD. Dr. Phillips, who has that matter immediately in charge, is here, if you care to hear from him.

**STATEMENT OF DR. E. F. PHILLIPS, AGRICULTURIST IN CHARGE
OF BEE-CULTURE INVESTIGATIONS, BUREAU OF ENTOMOLOGY,
UNITED STATES DEPARTMENT OF AGRICULTURE.**

Dr. PHILLIPS. Mr. Chairman and members of the committee, the work in bee-culture investigations of the department was entirely investigational until the beginning of the present fiscal year, at which time the committee and Congress saw fit to change the wording of the bill to permit demonstration work in beekeeping, and also gave an additional \$5,000 for that work. The reason for beginning this work in the Southern States was that two-thirds of all the bees in the Southern States are in log "gums" and box hives, and we thought that if we could do something for the industry there through extension work, we could better measure the value of extension work in beekeeping, so we placed three men in the Southern States.

With the outbreak of the war, the food situation became very acute, and the attention of the office was directed more particularly to the rapid increase in honey production. None of the men were then withdrawn from the southern field, but the activities of the office were diverted to a considerable degree to urging the beekeepers of the North and West, where commercial beekeeping is more commonly practiced, to increase their production immediately. To what extent that was accomplished we will probably never know, but certainly we succeeded in creating a wide interest among the commercial honey producers of the country. We did this by means of circulars, press notices, and all manner of propaganda material, and we succeeded in reaching a large number of beekeepers. We sent out from the bureau 350,000 circulars addressed directly to beekeepers and we received many favorable responses.

The Secretary of Agriculture saw fit to allot to this office the sum of \$15,000 from the food-production act for increasing the extension activities in bee culture. This permits the appointment of six additional men, provided they were appointed for the entire year. One of the men from the southern States was then taken from his field

and moved into a western district, making it possible to utilize seven men in the northern and western States. This is not a large number of men to cover such an extensive territory. We therefore found it best to divide the United States into districts, each man covering three or four States. These States were chosen with the idea of aiding the sections where honey production may be increased most rapidly in 1918; not so much an effort to build up the beekeeping industry from the ground as to obtain food immediately. All of these men are now in the field except one, who is here for a conference and will leave this week. Not all of the territory within these districts is equally valuable for beekeeping, and these men are directed to confine their efforts within their districts to those parts of the districts where the greatest return may be expected in the immediate future. I suppose it is needless to say that all this work is in cooperation with the regular extension forces of the department and of the various States concerned.

I may say, Mr. Chairman, that what we have in mind is, in brief, this: The United States now produces from 200,000,000 to 250,000,000 pounds of honey annually. This is equivalent to about 3 per cent of the amount of sugar consumed by the American people, a very small amount. In former times, bee culture played a very prominent part in agriculture, because from the bees we obtained our chief sweet. With the advent of cane and beet sugar honey was put, to a certain extent, in the background. However, there is enough nectar wasted annually in the country to produce ten times the present honey crop without increasing the cost of production per pound. Therefore, it seems desirable to save, so far as possible, this additional source of food, and we propose attempting to do this by the following method. It is not so much a matter of getting beekeepers to adopt better apparatus, although that is a pertinent question in parts of the country where the log "gum" and box hives are used, but it is rather a question of practicing better manipulation, because the financial return to the beekeeper is in direct proportion to the skill and knowledge of the owners of the bees, rather than of the locality in which the bees are. Consequently, in the present emergency we are not making a strenuous effort to induce more persons to keep bees. There are too many engaged in the business already, for there are perhaps 800,000 people in the United States who own bees. Our effort is to induce those who know how to obtain larger crops per colony to establish larger apiaries and to conduct them on a business-like basis, so as to get the maximum product. Our effort may result in a smaller number of beekeepers, but our object is a greater production per colony and a greater total crop. The time is near, it is true, when additional beekeepers may be desirable, and when each individual beekeeper may be urged to increase the number of his colonies, but what we now have in mind is the greatest possible production in 1918.

The CHAIRMAN. Any question, gentlemen? Anything further, Dr. Phillips?

Dr. PHILLIPS. I might add that in case the additional \$15,000 is granted, as provided for in the estimates, this amount would be used in the extension activities of the office rather than in research activities. There are many, many things which should be investigated in connection with bee culture in order to give us better manipulation

and reasons for those manipulations: but just now, in this emergency, we are trying to spread the knowledge we already have just as swiftly as possible.

The CHAIRMAN. We are much obliged to you, Dr. Phillips.

STATEMENT OF DR. L. O. HOWARD, CHIEF OF THE BUREAU OF ENTOMOLOGY, UNITED STATES DEPARTMENT OF AGRICULTURE—Continued.

The CHAIRMAN. Dr. Howard, take up item 42, "For investigations of insects affecting tropical and subtropical fruits, including insects affecting the orange, lemon, grapefruit, mango," etc., \$16,500. There is no change in that?

Dr. HOWARD. No change at all. Mr. Marlatt, who has charge of this item, has furnished me a statement which, with your permission, I will insert in the record.

The CHAIRMAN. As a matter of fact, the type of work is the same as you have been doing, Dr. Howard, under this item?

Dr. HOWARD. Precisely so.

(The statement referred to follows:)

The most important recent results under the appropriation for tropical and subtropical fruit insect investigations have been improvements in sprays for the control of citrus insects in Florida; better control of citrus scale insects in California by gassing, including a study of liquid hydrocyanic gas, a method now being widely adopted; very successful control of the fluted scale at New Orleans by its introduced enemy and extension of this control to other places in Mississippi, Louisiana, and southeastern Texas; and, lastly, a thoroughly effective control of California mealy bugs on citrus trees by the agency of the Argentine ant. It is desired to continue all of these lines of work, especially the perfecting and improving methods used in gassing citrus groves in California.

The CHAIRMAN. Take the next

Dr. HOWARD. This item, Mr. Chairman, also comes directly under Mr. Marlatt and is conducted in cooperation with the Federal Horticultural Board. I also have a brief statement regarding this work which Mr. Marlatt has prepared.

The CHAIRMAN. You might insert that in the record, Doctor.

(The statement referred to follows:)

Recent results gained under the appropriation for investigation and control of the Mediterranean and other fruit flies have been the substantial completion of the life history and host-plant relations of the Mediterranean fruit fly in Hawaii; the introduction and establishment and determination of the means of increasing the efficiency of introduced parasitic enemies of fruit flies; the efficient regulation of the export of fruit from Hawaii; the establishment of a station at Miami, Fla., to cooperate with and safeguard the plant-introduction gardens of the department at that point and to study the insect enemies of the special subtropical cultures of that region. There has also been started during the year a survey of fruit flies and other insects of the West Indian Islands and Central and South American countries, resulting in the securing of necessary information for quarantine purposes in relation to the citrus black fly of Cuba and Jamaica and in relation to some important fruit-fly enemies of citrus and other fruits in Cuba. There has also been a preliminary insect survey of the Virgin Islands and the Canal Zone, the latter being particularly a source of danger to the United States and already invaded by the citrus black fly. Steps are being taken to exterminate this insect in the Canal Zone. It is desired to continue these lines of work.

The CHAIRMAN. Item 44, "For investigations; identifications, and systematic classification of various insects," etc. There is no change in that item?

Dr. HOWARD. No change in the wording, and no change in the amount.

The CHAIRMAN. Is there any change in the character of the work?

Dr. HOWARD. Nothing at all; it is the same work that has been going on during the past year.

The CHAIRMAN. Doctor, there is no conflict between you and the Public Health Service in the study of insects affecting the health of man and domestic animals?

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Dr. HOWARD. Yes; and the rest is for necessary additional administrative expenses. Nothing further is to be said in explanation of it except that the work is growing.

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Mr. HARRISON. General overhead expenses. I shall be glad to insert a more detailed statement which will deal with the question for the department as a whole.

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can go? It is a moth or butterfly that lays in the seed or blossom, and it has spread so that it is absolutely ruining the wheat crop in the field or in the barn?

Dr. HOWARD. We are carrying on a special investigation of that insect. The damage depends very much on the way they handle the wheat crop in New Jersey and Pennsylvania. They cut it and transfer it to the barn and leave it until they are ready to thrash. If they would thrash it and then store it in bins, they would not have the damage.

Mr. HUTCHINSON. We understand that, but they all can't do that. Is there any remedy?

Dr. HOWARD. That is the only remedy of which we know. We have a station in Pennsylvania that is working along that line.

Mr. HUTCHINSON. New Jersey and Pennsylvania are affected with it very much. One-third of the wheat is affected, and the Government says that you must make so many pounds of flour out of so much wheat. It is impossible.

Dr. HOWARD. The same insect does great damage to the corn crop in the South as well as the wheat crop in New Jersey and Pennsylvania. It is called the fly weevil in the South.

Mr. HUTCHINSON. That will destroy the entire wheat crop?

Dr. HOWARD. Unless you change your methods. If the wheat is thrashed and put in a cool place, the damage is very small.

Mr. McLAUGHLIN. Does it attack the wheat after it is thrashed?

Dr. HOWARD. It will if kept in a warm place. The insects prefer to lay their eggs on the ear in the field.

Mr. McLAUGHLIN. After cutting?

Dr. HOWARD. Before cutting.

Mr. HUTCHINSON. It is this way: If a man thrashes and there is enough heat in the bin, it will come out and there is nothing that will stop it.

Dr. HOWARD. Of course, it is one of those pests that can be destroyed if the place is tight enough for fumigation, or if steam heat can be used.

Mr. HUTCHINSON. It is one of the most important things that this country ought to investigate. It is a serious thing. How long has it been known?

Dr. HOWARD. It was first pointed out in 1771 by Col. Carter, of Virginia. It is an imported insect, also. It came from France.

The CHAIRMAN. Anything further? Your bureau handles the pink bollworm proposition?

Dr. HOWARD. No, sir; that is under the Federal Horticultural Board.

The CHAIRMAN. Any further statement?

Dr. HOWARD. I think provision should be made for conducting the research work on the pink bollworm in the Bureau of Entomology. Police measures should be carried on by the Federal Horticultural Board, but all research on insects should be conducted by the Bureau of Entomology.

Mr. McLAUGHLIN. When we first heard of the pink bollworm it was simply a threat to come from Mexico.

The CHAIRMAN. It has crossed the line. We are very much obliged to you, Dr. Howard.

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ENTOMOLOGY.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
DECIDUOUS-FRUIT INSECT INVESTIGATIONS.....	\$83,380	\$83,380
<i>Apple insect investigations.....</i> To determine the life history and habits of codling moth, apple maggot, apple-tree borer, aphids, and other insects injurious to the apple, and to develop appropriate remedies for their control; also to determine what variations are necessary in the spraying schedule to control the codling moth in different parts of the country.	27,630	27,630
<i>Peach insect investigations.....</i> To determine the life history and habits of insects injurious to the peach, including curcullo, thrips, peach-tree borer, oriental peach moth, etc., and to develop appropriate remedies therefor.	8,664	8,664
<i>Grape insect investigations.....</i> To determine the life history and habits of the grape-berry moth, grape Phylloxera, and other important grape insects and to develop remedies for their control. During the past fiscal year extensive experiments in northern Ohio against the grape-berry moth established conclusively the efficacy of two early sprayings of arsenate of lead applied by the "trailer" method; that is, by hand, with short leads of hose from the spraying outfit. Heretofore vineyardists have found it necessary to make applications of poisons so late in the season that the fruit at picking time was coated with the spray to a very undesirable extent, greatly reducing its value.	7,660	7,660
<i>Nut insect investigations.....</i> To determine the biologies of and remedies for the principal pecan insects, chestnut weevils, and other important nut insects. Effective control measures have been developed for many of the insect enemies of the pecan.	14,380	14,380
<i>Orchard insecticides and spraying machinery.....</i> To test proprietary insecticides; to determine the comparative value of insecticides in general use and to what extent they may be combined with fungicides of various kinds in the control of insect plant pests; to develop new insecticides and determine their value in insect control and their effect on the insects and plants treated; determination of the comparative merits of various types of spraying machinery in general use and of accessories used in spraying. Calcium arsenate, a substitute for arsenate of lead, has been developed. This product may be readily and cheaply made at home. It has been taken up by manufacturers and is readily being adopted by orchardists on account of the economy in its use as compared with other arsenical insecticides.	9,552	9,552
<i>Cranberry and small-fruit insect investigations.....</i> Investigation of the important insects affecting the cranberry and other small fruits, such as the currant, gooseberry, huckleberry, blueberry, etc., and to develop effective control measures.	2,640	2,640
<i>Control of deciduous-fruit insects by natural agencies.....</i> To determine the importance of Hymenopterous parasites and predatory insects in the control of deciduous-fruit insect pests and devise methods for their practical propagation and dissemination; to investigate the fungi parasitic on deciduous-fruit insects, with a view to their utilization in the control of insect pests.	9,574	9,574
<i>Deciduous-fruit nursery insect investigations.....</i> To investigate the various insects affecting nursery stock and to develop remedies which may be effectively applied under nursery conditions; to investigate the efficiency of fumigation methods now employed by nurserymen and to effect improvement in disinfecting nursery stock.	300	300
<i>Orchard insect survey.....</i> To obtain information on the large number of insect pests of orchards, vineyards, etc., at present of lesser importance in the United States, but which may become important at any time.	3,010	3,010
CEREAL AND FORAGE INSECT INVESTIGATIONS.....	123,260	122,060
<i>Cereal insect investigations.....</i> Investigations of insects attacking cultivated grains, including the white grub, corn-ear worm, corn-root aphid, cutworms, western army cutworm, jointworm, European cornstalk borer, wireworm, chinch bug, Hessian fly, corn-root worms, and miscellaneous insects affecting rye, barley, and other small grains; and experiments in the utilization of natural enemies of such insects, besides remedial and preventive measures through mechanical and cultural means. Special intensive investigations of the Hessian fly were begun in Illinois, Kansas, Nebraska, and Missouri during the past year in cooperation with State experts. This is the beginning of experimental research work which will probably continue for several years.	76,560	80,360
<i>Forage insect investigations.....</i> Studies of insects attacking plants used as forage, including the alfalfa weevil, alfalfa seed chalcis, the alfalfa butterfly, insects affecting the produc-	46,700	41,70

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ENTOMOLOGY—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
CEREAL AND FORAGE INSECT INVESTIGATIONS—Continued.		
tion of clover seed, and insects attacking soy bean, sowpea, vetches, and other plants and grasses used for forage; and investigation of methods of combating these insects through the employment of their natural enemies and the utilization of mechanical and cultural remedial and preventive measures. In cooperation with the State authorities of California and with the Federal Bureau of Indian Affairs, work against serious general outbreaks of grasshoppers threatening the alfalfa crops in a dozen or more counties of California and Montana produced eminently successful results.		
SOUTHERN FIELD CROP INSECT INVESTIGATIONS.....	\$89,400	\$89,400
<i>Cotton insect investigations.....</i>	49,150	49,150
Investigation of the cotton boll weevil, including life-history studies, experiments in methods of cultivation, experiments in mechanical control, experiments with insecticides, improvement of machinery for the application of insecticides, value of parasitic enemies as a control measure, and collection of data as to the status and dispersion of the weevil; investigation and eradication of the new outbreak of the pink bollworm in Texas, in cooperation with the Federal Horticultural Board; study of the habits and extent of damage caused by cotton root aphids, cutworms, red spider, cotton bugs, and other insects affecting cotton in the Southern States, in Arizona, and in the Imperial Valley of California, and of appropriate remedies; study of the relation of insects to the shedding of cotton fruit, with a view to reduce loss from this cause. As the result of the work of the past two years, and especially as the result of extended field experimentation in Louisiana and Mississippi, it begins to be apparent that important results in the use of certain arsenicals applied in a certain way against the cotton boll weevil may be secured. In the extensive field experiments of the past fiscal year the yield of cotton was greatly increased.		
<i>Tobacco insect investigations.....</i>	29,000	29,000
Study of insects attacking tobacco, including hornworms, budworms, wireworms, and the large tobacco beetle; determination of methods of control by spraying and otherwise, and demonstration to planters of such methods; determination of feasible means to prevent losses in warehouses and factories due to the cigarette beetle; investigation of insects which transmit the mosaic disease. During the past year favorable results have been obtained in the use of arsenate of lead against the hornworm. Considerable progress has been made in investigation of the tobacco budworm in Florida, and it has been found that successful control could be effected with arsenate of lead mixed with cornmeal as a carrier. This carrier was the only one which yielded any success.		
<i>Rice insect investigations.....</i>	4,750	4,750
To investigate the means of control of rice insect pests.		
<i>Sugar-cane insect investigations.....</i>	6,500	6,500
To discover means of controlling the moth borer in sugar cane and corn, especially in adapting cultural practices to the increase of its parasitic enemies; to determine the damage done to sugarcane by miscellaneous insects, including leafhoppers, mealy bugs, and root borers, and to perfect means of control.		
FOREST AND SHADE-TREE INSECT INVESTIGATIONS.....	50,770	49,870
<i>Field investigations.....</i>	32,030	31,130
Determination of the character, extent, cause, and methods of prevention and control of insect damage to forest reproduction, the wood of dead, dying and felled timber; crude, finished, seasoned, and utilized forest products; hickory and ash forest and shade trees; and shade trees and hardy shrubs in general. Investigations of the relation of climatic conditions to forest tree insects, and methods of control, and of the interrelation of insects and forest fires in the destruction of forests. Systematic and economic investigations of the scolytoid bark and timber beetles, round-headed and flat-headed borers, and beneficial insects, and investigations of general methods of combating them. Instructions and demonstrations in the national forests and national parks relating to practical methods of preventing and controlling extensive insect depredations.		
In the field of forest entomology, the work of the past three years under recommendations by this bureau has almost completely eliminated the beetles that were killing timber in the yellow and sugar-pine areas of the Yosemite National Park. A survey of the timbered area of a large part of California, covering an area of a million and a half acres and including 19,000,000,000 board feet, has been completed. This survey was conducted in cooperation with the Forest Service, the National Park service of the Department of the Interior, and representatives of the larger private owners to determine the extent of depredations by bark beetles. Full reports have been submitted together with recommendations for concerted control operations.		
The methods recommended by the bureau, as the result of long experimentation, to prevent losses by white ants to the wood work of buildings, lumber, and other forest products, especially when intended for export to the tropics, are being adopted; so that American manufacturers can now compete for foreign trade.		

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ENTOMOLOGY—Continued.

Appropriations and activities	Allotment (lump fund).	
	1918	1919
FOREST AND SHADE-TREE INSECT INVESTIGATIONS—Continued. The methods ascertained by the bureau, applied to stored shipbuilding lumber and the large Army and Navy stores of handles, tent poles, wheelbarrows, oars, and other hard-wood articles are preventing damage by powder-post beetles, which is often extremely serious. Previous to the present war, large Army supplies accumulated for some time had been found practically ruined by these insects. <i>Laboratory investigations</i> Identification and classification of species; revising and bringing up to date the systematic knowledge of all North American species; determination of seasonal histories, food, and breeding habits, geographical distribution, and such other information of a technical nature about the species as is essential to the best success in the investigation and practical treatment of economic problems relating to special groups of forest and shade tree insects.	\$18,740	\$18,740
TRUCK-CROP AND STORED-PRODUCT INSECT INVESTIGATIONS.....	47,760	67,760
<i>Truck-crop insect investigations</i> Determination by the usual field, experimental, and research methods of the cause, extent, and character of insect injury to vegetable and truck crops with a view to develop effective preventive or control measures; includes investigations of insects affecting the potato, sweet potato, cabbage, and other cole crops, beans, peas, and other leguminous food crops, tomatoes, onions, cucumbers, melons, and other cucurbits, with especial attention to the Colorado potato beetle, potato tuber moth, potato aphids, potato stalk weevil, potato flea beetles, onion thrips, bean ladybird, bean aphids, pea aphids, cabbage looper, root maggots, cabbage-plant lice, cutworms, wireworms, blister beetles, and insects injurious to greenhouse vegetables and certain miscellaneous crops; determination of life history of sugar-beet insects, such as leafhoppers, false chinch bug, white grubs, and other pests; studies of the agency of insects in the transmission of cucumber and melon wilt and mosaic, potato blight and wilt, curly top of sugar beets, and similar diseases. The most important new results have been the discovery of the place of hibernation of the striped cucumber beetle, which has a strong bearing on the control of cucurbit diseases; demonstration of the value of lead arsenate and nicotine sulphate in meeting most requirements for spraying insects injurious to vegetables and truck crops; a study of the sweet-potato weevil, the most important insect pest in the South, with a view to its control; the completion of a comprehensive work on the potato tuber moth. <i>Stored-product insect investigations</i> Studies of both common and newly introduced insects injuriously affecting stored wheat, corn, oats, and other grains, and flour, meal, and other mill products, including all cereal foodstuffs in flour mills, elevators, and warehouses, involving a special investigation of railway and steamboat lines as carriers of infestation; study of the insect enemies of dried fruits and nuts, beans, peas, and cowpeas, and cured meats, hides, furs, and manufactured fabrics; and investigation and demonstration of appropriate measures for the control of such insects, including tests of promising and standard fumigants and other insecticides against these species, and of kiln-drying and heat methods against grain pests, especially grain weevils, and of those attacking edible legumes. It has been shown that the reason why the Angoumois grain moth has been so injurious to stored wheat in Pennsylvania is because of a wrong system of storage in tightly built barns and a thrashing at any time convenient to the owner. Early thrashing, with an entirely changed method of storing, the employment of fumigants, and practice of clean methods will lessen the damage enormously. Observations were made on the successful heating of a flour mill in Kansas to destroy the Mediterranean flour moth. It is very essential in connection with the present efforts of food conservation to materially enlarge and strengthen this field of activity, and plans are being made for a thorough-going investigation of the life histories and habits of these insects and for the enlargement of the work generally during the coming year.	40,760	37,760
	7,000	30,000
BEE-CULTURE INVESTIGATIONS.....	20,000	35,000
To determine the various methods by which bees respond to changes in external temperature and best methods of caring for bees during winter; the development of the bee in the larval stage; determination of the effect on bees of spraying fruit trees for codling-moth control; a study of the various diseases which affect the brood and adult bees; demonstrations and instructions in beekeeping through and in cooperation with the county agricultural agents in the Southern States; timely circular letters to beekeepers in various States designed to stimulate an increased production of honey for the present emergency. On the declaration of war the research activities of the bee culture branch of the bureau were temporarily suspended and a vigorous campaign was instituted to stimulate beekeepers to increased honey production. In cooperation with the States Relations Service, circulars were sent to every county agent in the country for distribution and letters were mailed to individual beekeepers, and the effort has met with an enthusiastic response. It is planned to still further increase the campaign for the increased production of honey during the continuance of the war.		

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ENTOMOLOGY—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
TROPICAL AND SUBTROPICAL FRUIT INSECT INVESTIGATIONS.....	\$17,100	\$16,500
Demonstration of control for the white fly and other citrus pests in Florida; perfecting and improving methods of gassing citrus groves in California; special investigations of the citrus mealy bugs in California, including the relationship of the Argentine ant to these mealy bugs, and the control of the fluted scale in Louisiana by means of the introduction and dissemination of its imported ladybug enemy. The most important recent results have been improvements in sprays for the control of citrus insects in Florida; better control of citrus scale insects in California by gassing, including a study of the use of liquidated hydrocyanic gas, a method now being widely adopted; very successful control of the fluted scale at New Orleans by its introduced enemy, and extension of this control to other places in Mississippi, Louisiana, and southeastern Texas; a thoroughly effective control of California mealy bugs on citrus trees by control of the Argentine ant.		
INVESTIGATION AND CONTROL OF THE MEDITERRANEAN AND OTHER FRUIT FLIES..	33,200	32,000
Study in Hawaii of the life history of the fruit fly in relation to its hosts; cooperation in the introduction and study of parasites from foreign countries; inspection and certification of pineapples and bananas and other plant products for export from Hawaii to the mainland of the United States, and general enforcement of fruit-fly quarantine: inspection of fruit imported into the United States, and general enforcement of fruit-fly quarantine inspection of fruit imported into the United States from Mediterranean and other countries in which the fruit fly is known to occur; study of the papaya and other fruit flies at Miami, Fla., in connection with a new project entitled "Investigation of insects affecting mango, guava, avocado, and other subtropical fruits"; study of fruit flies in connection with new project entitled "Insect survey of the West Indian islands and Central and South American countries," such survey having particular relation to insect pests of plants and plant products which are likely to be brought into the United States through the agency of commerce from the region designated. Recent results have been the substantial completion of life-history and host-plant relations of the Mediterranean fruit fly in Hawaii; important new work during the year, the introduction and establishment and determination of means of increasing the efficiency of introduced parasitic enemies of fruit flies; export of fruit from Hawaii to the mainland efficiently regulated and certain additions to such exported fruit allowed; cooperation with the Bureau of Plant Industry, with a view to safeguard the plant introduction gardens at Miami, Fla., by conducting a study of the insect enemies of the special subtropical cultures of that region; survey started during the year of fruit flies and other insects of West Indian islands and Central and South American countries, resulting in the securing of some necessary information for quarantine purposes in relation to the citrus black fly of Cuba and Jamaica and in relation to some important fruit-fly enemies of citrus and other fruits in Cuba; a preliminary insect survey of the Virgin Islands and the Canal Zone, the latter locality being particularly a source of danger to the United States and already invaded by the citrus black fly; steps being taken to exterminate the black fly in the Canal Zone.		
MISCELLANEOUS INSECT INVESTIGATIONS.....	56,380	52,330
<i>Identification and classification.....</i>	<i>24,730</i>	<i>20,680</i>
For investigation, identification, and systematic classification of miscellaneous insects: covers the miscellaneous investigational work not specifically provided for in other projects of the bureau.		
<i>Insects affecting the health of man.....</i>	<i>20,500</i>	<i>20,500</i>
Investigation and eradication of the body and head lice, house fly, disease-carrying mosquitoes, stable fly, Rocky Mountain spotted-fever tick, and other insects affecting the health of man: investigation and control of insects found in packing houses and associated with meat products and which therefore may transmit disease.		
<i>Insects affecting the health of animals.....</i>	<i>11,150</i>	<i>11,150</i>
Investigation of the various species of ticks which transmit disease or are important parasites of domestic animals and poultry, and of screw worm, horse bots, ox warbles, horsefly, horn fly, fleas, lice, etc., and determination of means of control. Important discoveries were made with reference to the screw worm, which is a very important pest of domestic animals in the Southwest, and with reference to the nose bot, which was introduced in the Northwest in recent years and which has already become a formidable pest. These results will serve as a basis for considerable extension activity which the bureau is about to undertake.		
GIPSY MOTH AND BROWN-TAIL MOTH INVESTIGATIONS.....	395,050	304,050
<i>Laboratory and field investigations.....</i>	<i>77,480</i>	<i>76,480</i>
Studies of the habits and life histories of imported parasites and natural enemies of the gipsy and brown-tail moths; determination of the extent to which these parasites are increasing under field conditions and their values		

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF ENTOMOLOGY—Continued.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
GIPSY MOTH AND BROWN-TAIL MOTH INVESTIGATIONS—Continued. as enemies of the insects concerned; collection and colonization of beneficial species in areas where they do not now exist in the infested territory; determination of the natural increase of the gipsy moth under field conditions; study of the feeding habits of the gipsy-moth larvæ in all stages and of the food plants upon which this species can not develop; investigation of the relation and effect on the increase of the gipsy moth of the disease known as "wilt," and of the effect of secondary insects on trees that have been defoliated by the gipsy moth; study of the means by which the gipsy moth spreads to new territory; and tests of new insecticides and methods of spraying or banding trees, in order to enable control work to be carried on more efficiently and economically. The most important new results of the work on the gipsy moth and the brown-tail moth have been the adoption of a new method of banding trees and the development of a tree-banding material prepared by the bureau in cooperation with the Bureau of Chemistry, resulting in a decrease in the cost; and an increased effectiveness of the parasites imported from Europe and Japan and established in the infested regions in New England; new discoveries concerning the "wilt" disease of the gipsy moth and the finding of a new caterpillar parasite of this insect.		
<i>Scouting and extermination work.</i> To determine the area infested by the gipsy moth and the brown-tail moth for the purpose of preventing the spread of these insects; and to apply exterminative measures in the territory where the best results can be secured in suppressing these pests.	\$169,570	\$169,570
<i>Relation of silviculture to gipsy-moth control.</i> To determine the relation of silvicultural conditions to gipsy-moth infestation and to demonstrate the best methods of handling forest growth so as to render it unfavorable to gipsy-moth attack; to determine the most profitable utilization of products cut.	5,000	5,000
<i>Quarantine and inspection of nursery, forest, and quarry products.</i> To provide for the inspection of plants and forest and quarry products, in order to prevent the dissemination of the gipsy moth and the brown-tail moth from infested areas.	53,000	53,000

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

ENFORCEMENT OF THE INSECTICIDE ACT

TUESDAY, JANUARY 8, 1918



WASHINGTON
GOVERNMENT PRINTING OFFICE
1918

AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Tuesday, January 8, 1918.

ENFORCEMENT OF THE INSECTICIDE ACT.

STATEMENT OF DR. J. K. HAYWOOD, CHAIRMAN OF THE INSECTICIDE AND FUNGICIDE BOARD, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. Turn to page 194, the Enforcement of the Insecticide Act. Dr. Haywood is present and will present the matter.

You have a few transfers, I believe, from the lump fund to the statutory roll.

Dr. HAYWOOD. One transfer from the lump fund to the statutory roll—a charwoman, at \$480—and the lump-fund roll has been reduced by that amount.

The CHAIRMAN. And then, in item 10, you have one sample and store room custodian.

Dr. HAYWOOD. A new place.

The CHAIRMAN. Tell us about that.

Dr. HAYWOOD. All samples collected by our inspectors are kept in locked storerooms. They must be received, critically and intelligently inspected for any defects, checked against inspection and shipping records, detailed records made, and filed under a satisfactory filing system, so that they can be obtained at a moment's notice. They must be properly referred for analysis and test and accurate records kept, to the four bureaus involved in the work, forwarded to our field stations, sent to the United States attorneys when cases are tried, sent to manufacturers when requested, etc. The person assigned to this work is frequently required to do rather rough and heavy work. Most of the samples are small, but there are quite a number of 50, 100, and 200 pound samples. It is not believed the duties of the position can be satisfactorily performed by a woman.

The man charged with the duties of this branch of the work must be a dependable, well-balanced person who would make a satisfactory appearance on the witness stand, since the custodian of samples may be called to the witness stand in any of our cases. At the present time we are obliged to depend on several different men, incidental to their regular work to take care of the official samples in the several storerooms. The work has increased steadily every year, and has now assumed such proportions that one man who is very level-headed and dependable should have charge of it. Our present arrangement of using part of the time of several men for this work is not satisfactory, in that it results in lack of systematic arrange-

ment of the hundreds of samples that are now on hand and consequent loss of time when we are obliged to consult the labels on these samples. Besides, the men who do most of this work at the present time would not be satisfactory witnesses to place on the stand in our court cases.

The CHAIRMAN. Take up the general-expense item—item 20. There is an increase of \$7,540?

Dr. HAYWOOD. There is an apparent increase of \$7,060, but the actual increase is \$7,540, because of the transfer of the charwoman to the statutory roll. This sum is needed in order to take care of the increased work of the board. It will be used to employ a chemist, who is also a bacteriologist, one assistant chemist, one chemist's aid, one entomologist, and one plant pathologist, and to pay their expenses. The board feels that during the war period it is especially necessary to enforce this act for three principle reasons. The first one is that the whole campaign for increased food production will be seriously jeopardized unless the farmers receive insecticides and fungicides which will do what is claimed for them on the labels. Second, there is a greatly increased use for disinfectants during this war period by the Army and Navy and the Public Health Service. A third reason is that we have noticed a marked tendency on the part of the manufacturers, because of the greatly increased price of some ingredients that go into the insecticides and fungicides, to substitute other materials for the ingredients that they have had in their products heretofore, with the result that their product is not as good as it should be. In consequence, it is necessary to again collect and repeat the analysis and test to ascertain whether such a product is as good as it was before.

By reason of all these things, the work has increased and we feel that these positions are necessary to enforce the law at the present time.

There are some special reasons for two or three places, for example, the chemist-bacteriologist. We only have one bacteriologist to help enforce the law. We lost the services of that man during part of last year. He came back to us after about six months. He had been called for duty in the Medical Reserve Corps of the Navy for that time. During his absence we were not able to get a man from the civil-service rolls to take his place. We did not have a man who could do the work and could not get anybody to do it. We want a man to serve as an understudy to our bacteriologist and to do the bacteriological work when this man is away on cases or on leave, or in case he is again called for duty in the Navy.

With respect to the entomologist and plant pathologist, whom we expect to pay only \$1,440 each, we have been getting along in the past by employing temporary men for that work during the summer periods. This arrangement is far from satisfactory. The employees should be in the department to do the work properly, in order to get the atmosphere of the department, learn what the department can teach him, and be available when needed at the trial of a case. Under the present arrangement he may be out of the country when needed or where it is very difficult and expensive to get him to the trial. It is not satisfactory to use temporary men. It is our plan to appoint two permanent men. We are not asking for any

additional sum to cover the expenses of these two men, as the amount we have been using to pay for the services of the temporary men will be used in paying the expenses of the permanent men.

The CHAIRMAN. Your general line of work is about the same as it has been?

Dr. HAYWOOD. Exactly the same; enforcing the insecticide act through the agency of four different bureaus, the Bureau of Chemistry, the Bureau of Entomology, the Bureau of Plant Industry, and the Bureau of Animal Industry. These scientists are put in these various bureaus to do the work under the direction of a member of the board in each bureau and the results submitted to the Insecticide and Fungicide Board for preparing the cases and transmitting them to the solicitor for action.

The CHAIRMAN. Any questions, gentlemen? If not, Doctor, I would be very glad to have you extend your remarks.

Dr. HAYWOOD. We have prepared a statement here which covers what I have said to you and also a statement which I believe was asked for relative to expenditures. The statement covers expenditures of each subactivity of the work.

The CHAIRMAN. That will go into the record without objection.
(The statements referred to are as follows:)

SUMMARY OF PRINCIPAL ACTIVITIES OF THE INSECTICIDE AND FUNGICIDE BOARD.

The Insecticide and Fungicide Board, composed of four scientists attached to the Bureau of Chemistry, Bureau of Plant Industry, Bureau of Entomology, and Bureau of Animal Industry, was organized in the Department of Agriculture to assist the Secretary of Agriculture in the enforcement of the insecticide act of 1910. Working under the board members in the various bureaus involved are chemists, entomologists, microscopists, etc., to analyze and test the various preparations coming within the purview of the law. The organization includes in addition a central administrative and inspection office, which has supervision over all work in connection with the enforcement of the act, covering the collection of samples of insecticides and fungicides and evidence of their manufacture and shipment, the preparation of cases for submission to the board and the solicitor, attending to all fiscal matters, accounting of property, correspondence, etc.

The enforcement of the insecticide act has been in operation since January 1, 1911. The act empowers the department to proceed criminally against shippers of adulterated or misbranded insecticides or fungicides and seize shipments of such adulterated or misbranded materials, provided the goods enter interstate commerce, are offered for export, or are manufactured, sold, or offered for sale in the District of Columbia or the Territories. Products offered for import at the various ports of entry also come within the purview of the law.

A survey of the work of enforcing the act during the year reveals that there has been an increase over the preceding year in the amount of work required to be done. This is due to a great extent to the apparent effort of manufacturers to use new ingredients in their products, which has necessitated an increasing amount of work in the adaptation of methods of analysis and test to special cases in which these new combinations, and sometimes new and unusual substances, occur. The materials collected and examined, and which are in use by the various agricultural classes, are those used in spraying plants such as fruit trees, vines, cotton, truck crops, etc., and in treating seed wheat and other cereals to combat insect pests and fungous diseases; and those used for various purposes on poultry and on horses, cattle, sheep, swine, goats, and certain other domestic animals. Many samples of disinfectants and germicides and of products to rid the household of insects were also collected and examined.

During the year the board reported to the solicitor of the department 126 cases presenting alleged violations of law, with recommendations that the facts be transmitted to the Attorney General with a view to the institution of criminal action or seizure proceedings. Disposition was made of 240 cases by

correspondence with the manufacturers. These cases presented violations which were technical only, were not flagrant, or cases in which the manufacturer gave reasonable and adequate explanation of his failure to conform to the provisions of the act. Action was taken to place in abeyance 795 samples which, upon examination and test, were shown to be in compliance with the provisions of the law or were from shipments of the same goods made prior to shipments for which the manufacturer had been convicted and had after citation conformed to the requirements of the law. On June 30, 1917, 94 cases were pending preliminary hearings or before the board for final action, 280 were held in temporary abeyance pending the receipt of further information or the outcome of prosecutions based on the same product, or correspondence with the manufacturers, and 274 samples were undergoing analysis and test. The inspectors and sample collectors of the board operating throughout the United States collected 984 samples during the year.

Various scientific investigations have been made by the chemists, plant pathologists, and entomologists of the board, in cooperation with the various bureaus of the department, to obtain basic facts to aid in the enforcement of the law.

REASONS FOR INCREASE.

There is an apparent increase in this item of \$7,060; but, taking into consideration the transfer to the statutory roll of one charwoman at \$480, the actual increase is \$7,540.

The increase is divided among the various subactivities of the board, as follows:

For the chemical subactivity, \$4,660, to be used for the employment of one additional bacteriologist-chemist at \$1,800, and to pay his expenses, the salary and expenses of one assistant chemist at \$1,440, and the salary of one chemist's aid at \$720; for the plant-industry subactivity, one plant pathologist at \$1,440; and for the entomology subactivity one entomologist at \$1,440.

It is the opinion of the board that it is especially important to effectively enforce the insecticide act during the period of the war for three principal reasons: (1) Because prices of basic materials used in manufacturing most of the important agricultural insecticides and fungicides and many of the dips and household insecticides have increased to such a marked extent since the European war began that there is a great temptation for manufacturers to either adulterate their insecticides and fungicides or skimp on the amounts of active ingredients stated on the label; (2) because this act covers disinfectants, and tremendously increased quantities of disinfectants are being used by the Army, Navy, and Public Health Service; (3) because farmers, orchardists, and stock raisers can not attain the maximum production of crops and the maximum production of cattle desired at this time unless they obtain on the market pure insecticides and fungicides which will do what is claimed on the label.

The chemical and bacteriological work in connection with the enforcement of the act has steadily increased each year since the law became effective, so that the chemist, bacteriologist-chemist, and chemist's aid asked for are needed to meet the natural increase in work which has arisen. Not only is this true but it has been found that during the war period manufacturers are apt to substitute cheaper and less effective constituents for the ones they have hitherto used in their preparations. This means that the chemical and bacteriological work is greatly increased, in that this work is now more difficult than it has ever been before, and extra investigative work is necessary to devise new chemical and bacteriological methods of analysis for the new mixtures and preparations.

The combined chemist and bacteriologist is very much needed to spend part of his time on the increased chemical work, and, in addition, to aid the present bacteriologist and serve as an understudy to him. It is felt that the bacteriological work on disinfectants should be kept at a high state of efficiency during the war because such large quantities of disinfectants are now used and so much depends on their efficacy. The bacteriology of disinfectants is a highly specialized branch of work and there are only a few men in the United States qualified to carry on this work. This extra combined chemist and bacteriologist is needed as an assistant and understudy to our present bacteriologist, not only to examine the increasing number of disinfectants that are being collected but to be able to take the place of our regular bacteriologist when he is absent on leave or at the trial of cases and also in case he should leave the service. As the enforcement of the law progresses and gross frauds

are suppressed dishonest manufacturers devise more subtle methods of adulterating their goods, so that more chemical investigative work is required to detect such adulterants. The plant pathological and entomological work necessary to enforce the insecticide act has increased every year since the law became effective, so that we are not able to keep up with the current work with our present force, nor are we able to perform the increased work made necessary by war conditions—i. e., because of the manufacturers' substituting one product for another and the necessity of testing the new substances and new mixtures against insects and plant diseases. To properly take care of the entomological and plant pathological work, it is our opinion that at least one plant pathologist and one extra entomologist are necessary, and these can not be obtained for less than \$1,440 each. During the current year and for several years past we have been getting along by employing extra temporary plant pathologists and entomologists, but this arrangement is inadequate and unsatisfactory, in that the men should be in the service all the year to properly make the tests, write up their reports, file their affidavits, appear in court, and get departmental experience along their line. No additional appropriation is asked for the expenses of these men, since the extra money appropriated by Congress last year for this work, which has been used to employ temporary assistants and pay the expenses of same, will be sufficient to pay the expenses of the permanent entomologist and plant pathologist.

The following statement shows the funds allotted by projects during the present fiscal year and the amount estimated for 1919:

Activities.	Allotment (lump. fund).	
	1918.	1919.
1. Administration, including inspection and collection of samples.....	\$13,091	\$13,091
Expenses incident to trial of cases ¹	11,000	11,000
2. Chemical, microscopic, and bacteriological examination of insecticides and fungicides (including disinfectants) other than those used on horses, cattle, sheep, swine, or goats.....	34,726	39,386
3. Testing of efficacy of fungicides and action on foliage of insecticides and fungicides.....	9,922	11,362
4. Testing of efficacy of insecticides and their action on foliage.....	10,358	11,798
5. Chemical and bacteriological examination of insecticides and fungicides used primarily on horses, cattle, sheep, swine, or goats, and efficacy tests of same....	8,333	7,853
Total.....	87,430	94,490

¹ Each year the board sets aside a sum of \$11,000 for expenses incidental to the trial of cases in court. It is not desirable to use any of this sum for current expenses, but the liability must remain set up until the very end of the fiscal year, since it is impossible to determine when a large part of the money will be needed for the trial of one or more important cases. As a consequence it is necessary for us to refund a considerable portion each year to the Treasury, with the result that the board does not have the use of the money for current operations, and the appropriation is therefore to all intents and purposes nearly \$11,000 less than it appears on paper.

(Thereupon, at 4.37 o'clock p. m., an adjournment was taken until to-morrow, Wednesday, January 9, 1918, at 10.30 o'clock a. m.)

part 17

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

ON THE

AGRICULTURE APPROPRIATION BILL

—
BUREAU OF BIOLOGICAL SURVEY
—

MONDAY, JANUARY 7, 1918



WASHINGTON
GOVERNMENT PRINTING OFFICE
1918

AGRICULTURE APPROPRIATION BILL.

COMMITTEE ON AGRICULTURE,
HOUSE OF REPRESENTATIVES,
Monday, January 7, 1918.

BUREAU OF BIOLOGICAL SURVEY.

The committee met at 10.30 o'clock a. m., Hon. A. F. Lever (chairman) presiding.

The CHAIRMAN. The committee will come to order.

On account of the fact that Dr. Nelson, the Chief of the Bureau of Biological Survey, is to be absent during the week, he has asked permission to present his estimates out of order in which they occur in the Book of Estimates. You will find the estimates of this bureau on page 132, and I will ask Dr. Nelson to present his case.

STATEMENT OF MR. E. W. NELSON, CHIEF OF BUREAU OF BIOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF AGRICULTURE.

The CHAIRMAN. In looking over your statutory roll I see that there is only one change in it, and that is found in item 4, where you have one executive assistant by transfer from the lump sum for administrative expenses, \$1,890. Is that the same salary that this gentleman was getting on the lump-sum roll?

Mr. NELSON. That is the same salary, including the 5 per cent increase; that is, he was getting \$1,800 plus 5 per cent. If he had been transferred without an increase to cover it he would have lost the 5 per cent, so that was added; otherwise it is the same.

The CHAIRMAN. There is no other change?

Mr. NELSON. There is no other change on the statutory roll.

The CHAIRMAN. Any questions on that, gentlemen? If not, Doctor, take up your lump-sum items. The first is item No. 25, for the enforcement of sections 241, 242, etc., an appropriation of \$22,000, which is the same appropriation as last year. Tell us briefly what you are doing under that item and what you propose to do.

Mr. NELSON. The \$22,000 granted last year included an increase, enabling us to employ two additional inspectors, or five in all, to control the interstate shipments of game throughout the United States. Before that we were unable to cover the whole country. The amount of the appropriation is only \$22,000 to enforce the law throughout the United States. That appears to be a small sum, but we have accomplished rather unusual results, and the illegal shipments of game are nearly done away with. We have closed up the shipments from

the Big Lake region in Arkansas, which was one of the worst offending sections. There were a number of persistent violators there who were in the business in a wholesale way, shipping to Chicago and other centers. They have been put out of business. The object of the Lacey Act is to help the States protect their game. Illegal interstate shipments of game are decreasing rapidly.

The CHAIRMAN. You propose continuing this same character of work during next year?

Mr. NELSON. We will continue the same work. I may say in this connection that 58 cases were instituted during the year and convictions secured in 40 of them.

The CHAIRMAN. That is pretty good.

Mr. NELSON. The work will be continued along the same lines, and there will be no change in personnel; that is, the same number of inspectors will be continued.

The CHAIRMAN. Take up item 26, for the maintenance of the Montana National Bison Range and other reservations and for the maintenance of game introduced into suitable localities on public lands, etc. Tell us a little about that.

Mr. NELSON. That is the same appropriation we have this year. We have 70 bird reservations and 4 large game reservations. The reservations are getting on in as good condition as could be expected under this small appropriation. Of course, we can not develop them as rapidly as is desirable. There are a number of the reservations that could be greatly improved in their usefulness to the public and in the increase of birds and game if we had more funds available. There is need of fencing and some additional lands, which I hope in the future may be provided.

I wish to call particular attention to the Sullys Hill Reservation in North Dakota, where we completed the house and barn for warden's quarters the past season. That reservation has a specific appropriation. We now have 14 elk and 5 deer on the reservation and are arranging to place there a small herd of 6 or 8 buffalo.

An interesting thing about the Sullys Hill Reservation is its popularity among the people of the surrounding region. It is a very fine picnic ground, and every pleasant Sunday in summer approximately 200 people come there. They come in automobiles from as far as 200 miles away; about 6,000 people visited the reservation last season. There is a beautiful little grove there with a pond, and Devil's Lake is just adjoining. The ground is hilly and covered with woods, alternating with open grassy spots, thus making a very attractive area. In view of its being located in the midst of a rather monotonous prairie country, this reservation has a very great interest to the people of that region. Before visiting it last summer I had an idea that we had about completed what should be done there. After visiting the park, however, I saw that some further improvements were called for. The roads where the automobiles approach the park are in bad condition, and various other items of improvement might be put in to great advantage. Additional fencing is needed in order to bring some of the game animals where the many visitors during the season can actually see them without difficulty. The day I was there I could not see any of the game. It was all hidden among the undergrowth in the woods.

Mr. McLAUGHLIN. What is the area of the whole proposition?

Mr. NELSON. We have 780 acres fenced, and I might say here that I think it would be a good thing to add somewhat to the area of this reservation. There is some good adjoining land that should be included.

Mr. McLAUGHLIN. It is so large now that you can not find the animals there.

Mr. NELSON. You can lose those animals on an acre of ground where the dense brush grows. It is planned to fence a small inclosure to hold some of the game so that anybody can see it. The day I was there people were asking where the game was, because it was not visible. It was, as I have remarked, in the brush.

The game is increasing rapidly on the bison range in Montana. We now have 200 buffalo from the 40 which were placed there in 1909.

Mr. McKINLEY. At what place is that?

Mr. NELSON. Near Dixon, Mont. Another interesting development is that at last we have succeeded in getting antelope to increase in this inclosure. This fine animal once so abundant in the West is disappearing, and it is feared that it will become extinct outside of the Government reservations within a comparatively few years. Our experience heretofore has been, and it has been the experience of others, that antelope placed in inclosures would not increase but would gradually decrease. This year we have had an actual increase on the bison range, and the antelope which were born puts the number there up to 34, which is extremely encouraging. There is an increase also of one antelope in the herd at Wind Cave Park, where we have 23, which is also encouraging. I trust we have reached the turning point and that our antelope may now increase and become amenable to living in fenced inclosures.

The CHAIRMAN. What is the number of buffalo in the country?

Mr. NELSON. There are about 5,000 buffalo all told in Canada and the United States. There are about 2,000 in this country. I am giving the estimates for 1916. The census for this year has not been taken.

Mr. McLAUGHLIN. Of that number in the United States, how many are under Government control?

Mr. NELSON. I think there are about 700 in the Government reservations. Others are scattered in zoological parks and in private herds at one place and another.

Mr. McLAUGHLIN. There are very few at large, I presume?

Mr. NELSON. There are none at large outside the reservations and a few on the range in the Kaibab country in northern Arizona, where Buffalo Jones tried to start a herd some years ago. I think a small band is still there. They are running on the open range with the cattle.

Mr. McLAUGHLIN. Did he make any progress in the crossbreeding proposition he had in mind?

Mr. NELSON. None whatever. Crossbreeding of buffalo and cattle has been tried at several places in Canada and in the United States, apparently without much practical success. Serious difficulties are met with in connection with the fertility of the crosses, and other drawbacks are encountered which have so far rendered the experi-

inent rather discouraging. What the final outcome will be it is not possible to say.

The CHAIRMAN. Anything further on that item, Mr. Nelson?

Mr. NELSON. I would like to say that I visited the Niobara Reservation in Nebraska and found that it held the same interest to the people of that region that Sullys Hill has in North Dakota. The Niobara Reservation is on the banks of a river, and the scenery is very attractive and picturesque. It is the site of an old military post and is a place to which the people come from all over the surrounding country, just as in the case of Sullys Hill. I hope that we may be able to provide some additional accommodations, so that when visitors go there they may be made more comfortable. One of our best wardens has now moved there with his family and is putting the place in good condition.

Last winter at the winter elk refuge at Jackson Hole, Wyo., we fed 640 tons of hay to the elk, and 400 tons were fed by the game service people of Wyoming. As you all know, owing to the severity of the winter, last year was a disastrous one for the stock interests in that region; it was likewise disastrous to the elk. About 1,500 elk died in the Jackson Hole area. Probably a smaller proportion of elk died than of cattle, due, no doubt, to the fact that hay was available to help them through. A report just in from Jackson Hole says that the weather the last of December was almost like October. No snow is on the reservation, and 4,000 head of elk have come down, an unusual thing at this time of the year. Whether that means that there is no grass on the range higher up or not I do not know. I am afraid it does, and if there is a severe winter the chances are there will be heavier losses of elk there this winter than last. Perhaps the same thing may hold good as regards cattle in that region.

On the Aleutian Islands Reservation, which covers the entire Aleutian Range, the Secretaries of Agriculture and Commerce have issued permit for two companies to try experiments to see whether those islands can be utilized, like the Orkneys, for growing sheep or cattle. The inhabitants have spent considerable money and are meeting rather hard luck. Dr. Smith, of one of the Portland banks, and associates are back of this thing. They appear to have abundant funds and intend to try out the matter very thoroughly. If they can succeed in growing sheep or cattle on the Aleutian Islands, there are hundreds of those islands available in the long chain extending into the Pacific. There is much grass growing there, but the climate is tremendously severe, with heavy storms and severe gales in winter.

Mr. McLAUGHLIN. That is being done without expense to the Government?

Mr. NELSON. It does not cost the Government a dollar. These people have spent thousands of dollars already and will have to continue the expenditure for the next two or three years before they can determine what the result will be.

We have tried to make the lands on these reservations available for the stock-raising industry where we can do so without interfering with the prime purpose of the reservations, which is to protect the bird and animal life.

On the Klamath and Malheur Reservations, in Oregon, we have permitted the people of the surrounding country to come in in the

fall and cut hay after the birds have left. We are making the reservations useful to the public in that way so far as we can without interference with the object for which they were established.

Mr. McLAUGHLIN. What kind of hay is that; a coarse marsh hay?

Mr. NELSON. It is a kind of marsh hay. It seems to be desired very much by the people up there. It apparently is useful for stock.

Mr. McLAUGHLIN. Have you done any seeding of tame hay on those places?

Mr. NELSON. We are growing tame hay on the reservation at Jackson Hole. By the way, I would like to add a little about the Jackson Hole winter elk range. Jackson Hole is just south of Yellowstone Park, and the southern Yellowstone Park elk herd comes down to winter in that vicinity. There are 20,000 to 24,000 elk that must depend for their safety in winter upon Jackson Hole and the surrounding country within a relatively short distance of that center. The settlement of the country and the occupation by cattle is such that, unless this reservation is maintained and a certain area for grazing kept for the elk, this herd will be wiped out. This game is a great asset in that region and as a business proposition is well worth preserving. I do not favor any increase in the present herds. I think that the Yellowstone elk herds have about reached their limit, both in the northern and southern herds. We, of course, can not replace civilization with game but we can maintain the game we have now by proper conservation and have the benefit of its yearly increase.

Mr. McLAUGHLIN. That is, you think you might provide for their increase?

Mr. NELSON. No; I think we can not. I think what we now have is as much as we can hope for, and I do not think we should try to permanently increase the main Yellowstone elk herds. Elk may well be increased in other areas in the West.

Mr. McLAUGHLIN. You can by trying?

Mr. NELSON. You can increase the Yellowstone herds by taking possession of surrounding ranges but the maintenance of these herds hinges on the winter range. There is an abundance of summer range. You could have twice as many elk if you had only to count on the summer ranges, but this is not possible.

Mr. McLAUGHLIN. What are the game laws?

Mr. NELSON. They permit the killing of a limited number outside the national parks and game preserves in a number of States.

Mr. McLAUGHLIN. And those that you are taking care of are permitted to be killed?

Mr. NELSON. Only when they are off the reservations. The game laws undoubtedly permit the utilization of the yearly increase, and I think that should be done where the game exists in sufficient numbers.

Mr. McLAUGHLIN. You think those game laws are right, considering the fact that you are spending money to take care of these elk?

Mr. NELSON. I think they are so far as killing the surplus where the breeding stock is sufficiently numerous. It is the same as raising cattle. Money is spent to raise cattle.

Mr. McLAUGHLIN. I was not finding fault. I was asking whether you thought the game laws were all right.

Mr. NELSON. I think so, in the main. The object of the game laws, of course, is to keep the killing down to the limit which shall permit the game to hold its own, and I think arrangements can be made to do that and to keep a continuous supply of game for the use of the people of that region.

Mr. LEE. You ship a few elk under proper regulations?

Mr. NELSON. A few go to different parts of the country.

Mr. McKINLEY. Are the game laws well enforced?

Mr. NELSON. Fairly well in some places but rather poorly in others. It is difficult to thoroughly enforce the game laws anywhere.

The CHAIRMAN. Take up item No. 27, for the maintenance and improvement of the game preserve in the Sullys Hill National Park in the State of North Dakota. You say you have completed your house and barn there?

Mr. NELSON. We have completed the house and barn.

The CHAIRMAN. And some fencing, too?

Mr. NELSON. And the fencing is completed for the 780 acres.

The CHAIRMAN. All right. Take up item 28, for investigating the food habits of North American birds and mammals in relation to agriculture, horticulture, and forestry, and so on, \$394,820, including \$15,000 for the destruction of ground squirrels; \$125,000 for destroying wolves, coyotes, and other animals injurious to agriculture, animal husbandry, and wild game; and \$125,000 for the destruction of these same animals in the national forest and for suppression of rabies, etc. Take up those items in the order in which they occur and give us a brief account of your work.

Mr. NELSON. The food habits of North American birds comes first. We have continued the investigation of food habits of birds, which is largely the field investigation of their habits, as related to crops and injurious insects and the examination under the microscope of five to six thousand stomachs to find out the exact food which they eat in order to establish the exact relations of various kinds of birds to agriculture through their destruction of injurious insects. Also we have investigated the complaints being made occasionally as to the destructive activities of certain birds which are ordinarily useful. In some places birds which throughout most of the country are highly beneficial develop locally injurious activities and attack fruit or other crops, and at present there is no legal means of controlling this situation. The migratory-bird law is a strictly protective law, and so are the laws of the various States. Under the migratory-bird treaty, the enabling act for which has passed the Senate and is now before the House, the Secretary of Agriculture is given the power, whenever any bird becomes injurious locally, to permit its destruction when necessary to protect the crops.

We have just had an instance in Arkansas. The wild ducks got into some rice fields and caused serious damage. Under existing laws you can not touch them during the closed season without danger of being hauled before a court and fined. But with the migratory treaty in force that matter could be handled very readily and such injuries as that stopped. This work in the investigation of the economic relations of birds to agriculture has developed such a definite kind of information showing the usefulness of insectivorous birds that it has caused the passage of protective laws in practically every State in the country. It is the basis on which the protective

laws throughout the United States have been made for the protection of useful bird life.

The CHAIRMAN. What amount do you expend for that particular purpose?

Mr. NELSON. Somewhere between \$20,000 and \$25,000.

The CHAIRMAN. Take up your next item.

Mr. NELSON. The next item is the investigation into the rearing of fur-bearing animals. We have a little tract of land up in northern New York, leased at a nominal rental, where we have several kinds of fur-bearing animals. We have mink, marten, muskrats, skunks, and blue foxes there, and are making a careful experiment as to the exact cost of raising these animals in captivity, with the idea of working out a system whereby the animals can be grown on farms in suitable parts of the country as a side line, just as they grow poultry. A number of these animals breed in captivity. The black fox industry is well established in Canada and in some parts of the United States, and large sums of money have been made. Even when sold at reduced prices black fox skins will bring from \$100 to \$500 apiece, and they have sold as high as \$2,500 each, that, of course, being an unusual price. But the industry of growing this fox would be very profitable even if the skins could be sold for only \$100 apiece.

The CHAIRMAN. Does that prove that the skins are so valuable or that the fools in this country are not all dead?

Mr. NELSON. They are sold all over the world. These big prices are brought in London and are paid by people of great wealth. The black fox and the silver black fox are the same, as you know.

Mr. McLAUGHLIN. When I was at home a few days ago I saw a set of furs of black fox, and the man who owned them said they were worth \$1,500.

The CHAIRMAN. All right, Doctor.

Mr. NELSON. I will add to what I have said about this business of raising fur-bearing animals, that I really believe there is a good substantial future for fur farming. The number of wild animals, of course, is decreasing, on account of the occupation of their territory for settlement all over Canada and the United States. At the same time the demand for furs is increasing, and there certainly is a future for that business.

The CHAIRMAN. Your next item, Doctor.

Mr. NELSON. The next item is the destruction of ground squirrels on the national forests and public lands.

The CHAIRMAN. That is \$15,000.

Mr. NELSON. Yes, sir. That is used largely in California, but also in Colorado and in some of the other States where the ground squirrels are pernicious. Ground squirrels are very active in the destruction of crops as well as of the range grasses. Sometimes as much as from 15 to 20 or even 50 per cent of the crops will be taken by them, and yet they are very readily destroyed. They can be poisoned at a cost of a few cents an acre. We experimented until we found a kind of food they like, and we feed it to them with a little strychnine added, and that kills the squirrels on a wholesale scale.

Mr. McLAUGHLIN. Are you reducing the damage very much?

Mr. NELSON. Very much. The work we have done in California on the public lands and in the demonstrations in the farming communities has interested the people, and because of our success the

State has got extremely busy. They have just set aside \$40,000 to kill the squirrels on their State lands, and established the position of chief inspector to take charge of the work. They have taken our expert away from us to fill this position at a salary of \$2,400 a year, and they are planning a campaign there that promises to be extraordinarily successful. The combination of poison and grain that we have worked out seems to be just what the squirrels want. The result is that nearly all of them are killed at the first application. That is, we will kill over 90 per cent, and we follow that up later by subsequent applications and they will be completely wiped out. They are spending in California this year in the various counties several hundred thousand dollars in labor and material for doing this work, and announce that they propose to keep it up on that scale until they absolutely wipe out the ground squirrels in California. The difficulty there for the department in the future is that, while California will work on its own State lands, there is a large area of Government lands surrounding them infested by squirrels, and I anticipate we are going to hear from the California people as to why we do not kill the squirrels on Government lands. We are already hearing from them; and, of course, these Government lands will be breeding grounds from which the State lands can be reinfested. The \$15,000 can not keep up with the activity of the State, which is spending several hundred thousand dollars. That is the difficulty we are going to meet in the near future.

Mr. RUBEY. You can permit them to come on our land and do this work, could you not?

Mr. NELSON. We are going to suggest in some cases that they might kill them on some of the surrounding Government lands where we can not get around to it. Mr. Hecke, the State Horticultural Commissioner of California, is very enthusiastic over this campaign. I saw him during the past summer, and at that time he had not gotten the State to appropriate \$40,000, but our expert was going around to the various county horticultural commissioners and holding cooperative meetings of the farmers; they were doing this work on a wholesale scale and getting really remarkable results. That resulted directly in the appropriation of this money and in the campaign being taken up the way it has. I might add that they have figured out that the annual losses from these ground squirrels in California are from \$30,000,000 to \$35,000,000.

Mr. McLAUGHLIN. What kind of crops do they attack?

Mr. NELSON. Practically every kind of forage and almost every crop. They injure grapes and grains of all kinds and attack the oranges, cutting off the upper branches of the young trees and gnawing the bark. I was talking with Horticultural Commissioner Hecke at the farming exhibits that they had in San Francisco last fall, and we were discussing the ground squirrel, when an old lady stepped up and said she wished we would tell her how to get rid of the squirrels; that she had an almond orchard in California, and that they destroyed hundreds of dollars worth every year; that she could kill them off from her place, but that the squirrels kept coming in from the surrounding lands, and that she had been losing a large amount every year from their depredations. It is practicable to clean out the squirrels in California, but it is going to take some years and

quite a lot of money, but far less than the losses for one year will do the job.

The CHAIRMAN. All right, Doctor. Take up the next item.

Mr. NELSON. I overlooked the item concerning prairie dogs, which should have been taken up previous to ground squirrels. This includes prairie dogs, ground squirrels, gophers, jack rabbits, and other destructive rodents. We have for several years carried on the destruction of prairie dogs on a large scale in the national forests at the request of the Forest Service, and have destroyed them on about 3,500,000 acres. The Forest Service estimates that where a range is infested by prairie dogs the destruction of these pests increases the carrying capacity of the range 50 per cent, so that it is evident that it is pretty useful work to get rid of the animals doing the damage. These various range-destroying rodents probably occupy not less than 200,000,000 acres of lands in the western United States in the range States. They can probably be completely eliminated for less than the value of the crops destroyed by them each year. I think it is safe to estimate that the losses caused by these animals amount to from \$150,000,000 to \$200,000,000 a year in the Western States.

Mr. McLAUGHLIN. Do you eliminate them or do they return?

Mr. NELSON. They can be absolutely eliminated.

Mr. McLAUGHLIN. What has been the result on this 3,000,000 acres that you have cleared of them? Have they returned?

Mr. NELSON. Prairie dogs are very social animals, as you know, and live in "towns." We poison a great area and kill perhaps 80 per cent the first season. The next season we return and find that the survivors have concentrated. Then we poison the little colonies of the survivors and get them nearly all. You can repeat that every two or three years at a constantly decreasing expense until extermination is complete. The expense is nominal, and you actually wipe them out.

Mr. McLAUGHLIN. And they do not return to the area from which they are eliminated?

Mr. NELSON. Of course, if you let the surrounding area alone and let them come to it they will not be eliminated; but our plan is to continue the poisoning and organize cooperative campaigns among surrounding landowners, and not permit them to return; simply clean them out.

Mr. McLAUGHLIN. How long did it take you to clean them out from these 3,000,000 acres?

Mr. NELSON. I think that has been done mainly in the last three years.

Mr. McLAUGHLIN. So it would take several years to clean up the 200,000,000 acres?

Mr. NELSON. It would at that rate; but through the organization of the cooperative campaigns under the direction of this bureau the work is now progressing far more rapidly. Such poisoning campaigns have resulted in the poisoning of prairie dogs and ground squirrels on more than 15,000,000 acres in the past two years, and this work is now being extended vigorously.

The CHAIRMAN. I think it would be interesting to show the committee the photograph you showed me in this connection.

Mr. NELSON. We conducted operations in the vicinity of Flagstaff, Ariz., the country being infested with prairie dogs, and last summer one of our men made an experiment. He poisoned 320 acres of open-range land infested by these prairie dogs. One man was put on it for one day to scatter the poison, the cost of which was \$9.70, or something near that, to poison this whole area, and the next morning they went out and picked up 1,621 prairie dogs and piled them up. [Exhibits photograph.]

Mr. HAUGEN. What do you do with them after they are killed?

Mr. NELSON. Nothing; the buzzards eat them.

Mr. HAUGEN. The fur is of no account?

Mr. NELSON. No. There is absolutely no use that can be made of the skin. We have tried to make use of them but have failed.

Mr. HAUGEN. Do you poison the jack rabbits the same way?

Mr. NELSON. Yes, sir; the same way.

Mr. HAUGEN. Are not they of some value?

Mr. NELSON. Not after they are poisoned. There must have been several hundred prairie dogs that went into the holes. Of course, those shown in the picture were on the surface, and there must have been over 2,000 prairie dogs killed on that tract at a cost of a little over \$9.

Mr. HAUGEN. What is the cost of clearing an acre?

Mr. NELSON. Where we pay for the labor and all, it costs us from 5 to 8 cents an acre ordinarily. Sometimes it will go even less than that.

The CHAIRMAN. All right, doctor, go ahead.

Mr. NELSON. I might say that we are getting a lot of cooperation in this work. In North Dakota, for instance, where ground squirrels are very destructive, we have been carrying on a campaign for some years. Last summer they organized a campaign in which more than 16,000 farmers took part, and they cleared the ground squirrels on more than four and one-half million acres. They estimated the saving to be from one and a half to two million dollars as a result of last spring's work. The participation of the Department of Agriculture involved an expenditure of about \$3,600, and we furnished the expert assistance which made this campaign possible. North Dakota people are very much worked up over this thing, and next year they plan to extend it very largely.

There is no question but that within a very few years North Dakota will be free of ground squirrels, which are taking many millions of dollars out of their crops every year. The different States are putting up money on these cooperative campaigns, and in Montana eight counties have put up over \$22,000 to form a revolving fund for the purchase of poison to use in killing prairie dogs and squirrels in the community campaigns under the direction of our experts. In Arizona, where this killing I have shown you was made, the stockmen are spending thousands of dollars in doing the work under the direction of our men. One stockman told our field man that he was ready to spend \$3,000 the coming spring to kill prairie dogs. He said he would either have to kill the dogs or go out of the cattle business. The people all over the West are waking up as a result of the demonstrations we have made, and the cooperation is becoming stronger and stronger.

Mr. HAUGEN. Are you doing anything to kill off gophers in North Dakota?

Mr. NELSON. Yes, sir.

Mr. HAUGEN. The gophers are more destructive than prairie dogs in North Dakota.

Mr. NELSON. The ground squirrel that I am speaking of is what you call gophers up there. Locally they call them gophers. I just said that they cleaned them off of more than four and one-half million acres last summer. Over 16,000 North Dakota farmers united in a campaign last spring against these ground squirrels.

Mr. HAUGEN. That is done by the local authorities?

Mr. NELSON. Under the guidance of our expert. We are furnishing the knowledge under which this done, and then the local people do the work.

Mr. HAUGEN. The farmers are taxed for all the cost?

Mr. NELSON. Yes. We furnish the man who knows how to do it, and he goes to this community gathering, mixes the poison, and tells them how to use it.

Mr. HAUGEN. That is, on the public lands?

Mr. NELSON. No; that is on the farms. He makes this demonstration. We do not spend any money in buying the poison or anything of that sort, but we do send an expert there to tell the people how to do the work.

Mr. HAUGEN. To what extent have you done that in North Dakota?

Mr. NELSON. I just explained that 16,000 farmers were all working under the administration of this man.

Mr. HAUGEN. But I had reference to the Government. How much is the Government doing toward it?

Mr. NELSON. Nothing but furnishing the expert knowledge.

Mr. HAUGEN. To what extent did you demonstrate at that time? How many men did you have at that time?

Mr. NELSON. We had two men at that time.

Mr. HAUGEN. They worked all the time?

Mr. NELSON. They worked all winter, but one of them was taken by the draft in the spring, and that left only the head man, and he will work this winter in keeping up these organizations. We work in cooperation with the State extension service and the county agents, so that our man is multiplied a good many times in that way. He passes on his knowledge to the county agents and meetings are held in which this information is put out to the farmers and prepared poison is distributed.

The CHAIRMAN. Take up your next item, Doctor.

Mr. NELSON. The next item is the discussion of wolves, coyotes, and other predatory animals. The region of the West infested by predatory animals is divided into nine districts, each district with an inspector in charge, who employs hunters to poison and trap predatory animals. We have now 9 districts, each under the charge of an inspector, and 333 hunters to do the work. Many of these hunters, however, are being paid by the States. There is a lot of cooperation in this work. When we first began there was a strong desire on the part of stockmen to continue the old bounty system of paying so much for each animal killed. We were opposed to it because we had information from years past that the bounty system was filled with

fraud. It was so notorious that there were practically millions of dollars paid out in this country on fraudulent claims for bounties, and my stand and the stand of Mr. Henshaw, chief of the bureau at that time, was that the department could not afford to have a hand in a bounty system which would undoubtedly result in all sorts of scandal. So we started in with the system of employing hunters, having inspectors, expert trappers themselves, in charge of the work. These men knew how to trap and hunt these animals, and they were to hire in each States the best and most reliable hunters they could get. Of course, they hired a good many men who were worthless, but the men of that type have been weeded out as rapidly as their worthlessness developed. We now have, you might say, the cream of the hunters in the West working for us, and their work is bringing good results.

I might give you an example of one hunter in Idaho who runs a trap line 150 miles in length and in one month last summer he got 87 coyotes and 2 wild cats. That is a pretty good record for one man. We made a specialty, where the stockmen put in a complaint that the wolves or coyotes were destroying sheep or cattle in any district, to send there at once some of our best hunters in order to get the destructive animals. Among the coyotes and wolves there are always some much worse than others, and when an outbreak of destructiveness starts we go after the particular animal or animals responsible. Down in New Mexico the wolves are particularly destructive and we have been very fortunate in getting stock-killing animals there. Last season—I think it was in October—one of our men got one wolf which had killed during the preceding six months about \$5,000 worth of stock. They knew that this wolf had done the killing because he was a three-legged wolf, having lost one foot in a trap; so wherever he stepped with that leg he made a little punch like a cane. Thus, whenever an animal was killed the track of this wolf was unquestionable. That wolf had killed over 150 head of cattle in the preceding six months. The cattle owners had been trying for two years to get rid of this wolf. They themselves had trapped and had hired professional trappers, but without success. Finally, they asked us to help them out. We sent a man down and he caught the wolf. The stockman wrote a very grateful letter expressing his appreciation at having got rid of this pest.

We have taken in all since we began this work the skins of over 55,000 predatory animals. Among these 1,164 were gray wolves. As you all know, the gray wolf is the worst stock-killing animal on the range. We also got 46,250 coyotes, 123 bears, 125 mountain lions, and 5,813 bobcats.

Mr. ANDERSON. What do you do with the skins?

Mr. NELSON. The skins are Government property. They are sold at auction. Over \$45,000 worth have already been sold and the money turned into the Treasury, and we have about \$10,000 worth on hand.

Mr. HAUGEN. What is the cost?

Mr. NELSON. We have spent on that work altogether nearly \$300,000, I think.

Mr. HAUGEN. And the net receipts are about \$55,000?

Mr. NELSON. That is what has come back to us on the skins.

Mr. HAUGEN. And the net cost is about \$245,000?

Mr. NELSON. Yes, sir. You can get, perhaps, a concrete idea of the benefits that have come to the range from the destruction of these animals by the fact that the Forest Service has made an estimate that the gray wolves destroy an average of \$1,000 worth of stock a year; coyotes, \$500; mountain lions, \$100; bobcats, \$50; and the cattle-killing bears, about \$500.

Mr. HAUGEN. What is the average cost of destroying them?

Mr. NELSON. The average cost is between eight and nine dollars, not counting what we get back from the sale of furs.

On the basis of the above estimate made by the Forest Service there is a saving in live stock of about three or four million dollars a year owing to the killing of these predatory animals.

Dr. Crile, president of the Agricultural College of New Mexico, made a survey of New Mexico last summer and found out what the injury in his State amounted to from the depredation of these animals. He put the losses of cattle at 34,350 head; sheep, 165,000; and horses, 850 head each year as a result of depredations of predatory animals. That amounts to quite a heavy drain on the stock industry.

Mr. McLAUGHLIN. Is that State making appropriations?

Mr. NELSON. The State council of defense has just put up \$25,000 out of their emergency money to be used in connection with some money put up by the department for that purpose to help out in this campaign.

Mr. McLAUGHLIN. Is that the first appropriation?

Mr. NELSON. The first direct appropriation in that State, I believe. In Nevada they have put up about \$35,000 a year. Utah puts up \$35,000 and Washington \$15,000. Many small sums have been raised; for instance, in western Colorado the sheepmen in an organization there have just assessed themselves \$2,000 to be spent under the direction of our men. All this money that is put up co-operatively is to be spent by our men; that is, to be expended under their direction; they do not handle any of the money. They hire and supervise the work of the trapper and certify to his services, and the State pays the man's salary.

Mr. HAUGEN. You spoke of the Council of National Defense appropriating money. Is that the Federal?

Mr. NELSON. No; the State council. As I remarked a little earlier, the cattle and stock men were first opposed to our method of work and in favor of paying bounties. I may say that the success of our men in cleaning up these animals has been such that the sentiment in favor of the change has been almost unanimous. Practically all of them have now given up the bounty basis, and they are putting up money to be expended under our direction.

The CHAIRMAN. This is very interesting, Doctor, but we will have to hurry along.

Mr. HAUGEN. Would it not be practicable and possible to hunt and trap jack rabbits and utilize them for food?

Mr. NELSON. We are making drives for jack rabbits in some of the States where they are abundant, and they are being marketed. Some of the money is going to the Red Cross.

Mr. HAUGEN. It does not matter what use it is put to, so it is put to something.

Mr. NELSON. They are being utilized where it is practicable, but in many places, where they have to be killed on a big scale, you can not handle the matter that way. We can poison the animals, as we did in eastern Oregon—about 75,000 in one county in one winter.

Mr. HAUGEN. The food supply is important also.

Mr. NELSON. It is not important enough in comparison with the damage done by these animals to crops.

I might speak about the rabies appropriation. There are sporadic cases in Wyoming, Utah, and western Montana, as well as in Nevada, California, Oregon, Washington, and Idaho, but the number of animals lost by being bitten by rabid animals has decreased. Now, when there is an outbreak of rabies we immediately send our best hunters to kill all the predatory animals in the vicinity. In that way we have smothered out outbreaks of rabies in a number of places, and I think we are going to be able to get it gradually under control. It has been and is a very difficult matter, owing to the enormous area over which this disease is spread, but I think by a system of getting men right on the spot at once, as soon as the word is received, that we can handle it better than ever before and stop those great outbreaks.

Mr. ANDERSON. Are those outbreaks reported promptly?

Mr. NELSON. Yes, sir. We have an inspector living in each State and working in cooperation with the State authorities, and they notify him immediately.

Mr. McLAUGHLIN. Does the animal affected with rabies ever recover?

Mr. NELSON. Very rarely. Of course, there have been between 100 and 200 people bitten out there, and a few of these have died, but most of them had the Pasteur treatment and recovered. Of course, a person bitten by an animal affected with rabies does not lose much time in getting to a place where he can be cured.

The CHAIRMAN. Take up your next item—No. 49—for biological investigations, including the relations, habits, geographic distribution, and migration of animals and plants, and the preparation of maps of the life zones, \$25,600. There is no change in the amount of that appropriation?

Mr. NELSON. No change. This is the fundamental scientific work of the bureau that is needed by all of the other sections. The migratory-bird work and investigations into the habits of birds and mammals are based on the scientific information which this section of the work furnishes. I might say that we are going to turn some of the experts in this work to examinations of the range and stock destroying rodents with a desire to make it of important practical benefit and for getting information which we need in our campaign for destroying these animals and so increasing the crops. Of course, this campaign against predatory animals and noxious rodents is a tremendous factor in increasing the food supply. Every one of these rodents we kill adds that much to the crop output, and every predatory animal we kill adds that much to the meat output. The general lines of work that we have been carrying on for years under biological investigations will be carried on so as to keep the projects alive, but we are going to try to make the work as immediately practical as possible.

The CHAIRMAN. Your next item is number 30, for all necessary expenses for enforcing the provisions of the act of March 4, 1913, relating to the protection of migratory game and insectivorous birds, \$50,000. That appropriation stands at the same figure?

Mr. NELSON. We will go on with our same 16 inspectors and about 200 dollar-a-month wardens, most of whom are State game wardens at the same time. The migratory-bird law at first met with an antagonism among a good many people because it interfered with the privilege of shooting in the spring. The results have been so remarkably beneficial and there has been such an enormous increase in the wild waterfowl as the result of the stopping of spring shooting that there has been, you might say, an almost unanimous change of sentiment. There are still a few people who desire to shoot in the spring, but a short extract from a letter I have just received from the chairman of the Kentucky State Game and Fish Commission indicates the change of heart in regard to this law that has occurred in so many parts of the United States. I recently wrote and asked him some questions about the wild-fowl situation, and he says:

I am pleased to state that the number of wild fowl killed in our State during this year shows a considerable increase over the past three years, which I take it is a result of the enactment of the migratory-bird law and the regulations thereunder prohibiting spring shooting, shipment, sale, and transportation of wild fowl, and, while the Kentucky commission has differed with you in some of your regulations, especially that of jacksnipe, we think the benefit of the law, even where imperfectly enforced, is so evident that we have recommended to the governor in our biennial report the enactment of a law in Kentucky conforming to the Federal regulations.

Twenty-four States already have changed their laws to comply with our regulations. We have received letters recently by the score, many of them from sportsmen, stating that they have killed more ducks than ever before. So, as a result of this law, we have a direct food increase. I have a great many letters similar to that from Mr. Sachs, of Kentucky.

Mr. JACOWAY. Will you please put into the record the names of the 24 States which have amended their laws to conform to the provisions of the Federal act?

Mr. NELSON. I will be glad to do that.

(The statement referred to follows:)

Following is a list of the States in which the seasons on water fowl under State laws conform with the seasons under the Federal migratory-bird regulations:

Arizona.	Michigan.	Oklahoma.
Arkansas.	Minnesota.	Oregon.
California.	Montana.	South Dakota.
Colorado.	Nebraska.	Tennessee.
Connecticut.	Nevada.	Utah.
Idaho.	New Hampshire.	Vermont.
Maine.	New York.	Washington.
Massachusetts.	North Dakota.	Wyoming.

Mr. HAUGEN. How about the appeal taken?

Mr. NELSON. Perhaps I might explain a little about the situation with regard to the migratory-bird law. As you perhaps all are aware, the constitutionality of that law is now before the Supreme Court in a test case.

Mr. OVERMYER. It has been for several years.

Mr. NELSON. It has been for several years, and meanwhile the United States has made a treaty with Great Britain by which Canada joins with the United States to protect migratory birds.

Mr. OVERMYER. Do you think the Supreme Court will ever render an opinion in that case?

Mr. NELSON. It is pretty hard to say.

Mr. OVERMYER. Have you any hope in that direction or in that regard?

Mr. NELSON. I hope that there will be no need for it, as I will explain in a moment.

Mr. OVERMYER. It is my suspicion that they think there is no need and will never pass on it.

Mr. NELSON. This migratory treaty was completed last year, and the Senate passed an enabling act to put it into force. That enabling act is now before the Foreign Affairs Committee of the House, and as soon as that is passed it repeals the migratory-bird law and takes its place. This treaty enabling act, which is along the same lines, will increase the benefits, because it will be an enforceable law, while the present migratory-bird law is imperfect in that it does not provide the necessary power for its proper enforcement.

Mr. RUBEN. Have we any game law in the District of Columbia?

Mr. NELSON. There is a game law.

Mr. RUBEN. They seem to sell game whenever they want to here. I wondered if there were any restrictions?

Mr. NELSON. I think there is a restriction against killing the game in the District of Columbia. The District of Columbia is pretty nearly a game preserve, but Congress continues to permit the sale of game.

Mr. RUBEN. There is nothing against the sale?

Mr. NELSON. There is nothing against the sale at all during a large part of the year. Game can be shipped in legally from many States—Virginia, for instance. Game is also brought in illegitimately in automobiles and wagons and ways of that kind. We do our best to prevent it from being brought in illegally by common carriers, but we can not stop it from coming in in private conveyances. There has been a great deal of criticism because the sale of game is permitted by law in the District of Columbia. The people in various parts of the country said that the Government had the Lacey law and was very stringent in stopping the interstate shipment of game in various sections, but right here under Congress the sale of game was continuing. People have come very indignantly to me again and again and demanded to know why the Department of Agriculture did not stop the sale of game in the District of Columbia, and I have had to refer them up here on the hill; it was beyond our power to stop it.

The CHAIRMAN. Your next item, No. 31, is for your general administrative expenses. There is no change in that item?

Mr. NELSON. No change here.

The CHAIRMAN. And the character of the work necessarily is the same?

Mr. NELSON. The same as last year; for the employment of extra labor and clerks, the purchase of supplies, and for conducting co-operative work with the different bureaus and Government departments.

The CHAIRMAN. Is there anything further, gentlemen? If not, we are very much obliged to you, Dr. Nelson.

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF BIOLOGICAL SURVEY.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
GAME PRESERVATION	\$22,000	\$22,000
For the enforcement of secs. 242, 243, and 244 of the Criminal Code of the United States regulating interstate shipments of game. 45 cases involving illegal shipments of wild game made in interstate commerce were reported for prosecution during the fiscal year ending June 30, 1917. Illegal shipments comprising wild ducks, upland birds, squirrels, venison, and hides of fur-bearing animals, were made from 15 States. 32 cases were disposed of by the courts, only 1 case being dismissed for lack of sufficient evidence, and in 1 case a verdict of not guilty being returned. Shipments of wild water fowl from the Big Lake district of Arkansas have been stopped, and as a result the wild-game market in Chicago has been practically closed. Special attention has been directed to the illegal shipment of quail from the middle Western States, there being 22 cases of this kind reported. The work done by the bureau under this act is steadily bringing about a better observance of State game laws, and it is proposed to continue it along the same lines during the fiscal year 1919. Work covering the compilation, publication, and distribution of information concerning game, game laws, interstate commerce in game, and importation of foreign birds, and the prevention of the introduction from foreign countries of injurious species of birds and mammals, including diseased quail from Mexico, is also carried on under this appropriation.		
MAINTENANCE OF MAMMAL AND BIRD RESERVATIONS	\$35,000	\$35,000
To preserve and perpetuate the bird life of the country, as well as the game mammals, for the benefit of the public both from an economical and recreational standpoint; to stock national game preserves and other reservations with big game and game birds adapted thereto. A general increase of bird life is reported from practically all of the reservations, also a satisfactory increase of game animals on refuges. The number of buffalo on our big-game reservations was increased during the past fiscal year to 246 head by the birth of 41 calves. The usual large number of water birds were bred on the Malheur Lake and Forrester Island reservations, and enormous numbers of migratory wild fowl visited Malheur, Klamath, and Big Lake reservations during migrations.		
SULLYS HILL NATIONAL GAME PRESERVE, NORTH DAKOTA	\$5,000	
The improvement and maintenance of a game preserve in the Sullys Hill National Park for the preservation of birds and game mammals. The headquarters and barn on this preserve have been completed and 14 elk and 5 deer have been placed on the reservation. It is planned to place a small herd of buffalo on the preserve as soon as arrangements can be completed for their purchase and transportation. This game preserve has become a very popular resort, and the warden reports that approximately 6,000 persons visited it during the past year. He reports that they come from as far as 200 miles away. The forest and a small pond on the preserve, combined with the presence of game animals, make it unusually attractive to people of the surrounding region.		
INVESTIGATIONS OF THE FOOD HABITS OF NORTH AMERICAN BIRDS AND MAMMALS	\$395,540	\$394,820
<i>Food habits of birds and mammals</i>	\$145,540	\$144,820
To determine what native and introduced birds are beneficial to agriculture, horticulture, and forestry, and what species are injurious; to devise and demonstrate methods for controlling wild mammals destructive to agriculture, animal husbandry, range lands, and forestry. In the control of prairie dogs a total of about 1,000,000 acres of Government land were treated the past year with poison, reducing the animals about 90 per cent or more, at a cost of 5 to 10 cents per acre. This brings the total area of Government lands practically freed of these pests by the Biological Survey up to about 3,000,000 acres. Operations were conducted in Arizona, New Mexico, Colorado, Wyoming, Montana, and South Dakota. Farmers and stockmen were shown effective methods of destroying these animals and aided in organizing campaigns to protect their crops and pasture ranges from the depredations of prairie dogs in these and other infested States. Plans of cooperation were effected for more extensive campaigns in agricultural and live-stock raising districts. Prairie dogs inhabit many millions of acres of the best grazing land in the West, on which it is estimated that they destroy annually 50 per cent of the forage. In addition, these pests destroy a great amount of grain and forage crops of the farmers. It is estimated that the extermination of these animals throughout their range would result in an		

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF BIOLOGICAL SURVEY—Contd.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
INVESTIGATION OF THE FOOD HABITS OF NORTH AMERICAN BIRDS AND MAMMALS—Continued. increase in the carrying capacity of the ranges in that region sufficient to support nearly 1,000,000 more cattle and 1,000,000 more sheep than is now possible. The destruction of ground squirrels has been organized on a large scale in North Dakota, Montana, Idaho, Oregon, and California, and the initial steps have been taken toward the development of this important work in other States. Reports from North Dakota show a destruction of 75 to 98 per cent of the ground squirrels as a result of the first application of poison under the direction of a representative of the Biological Survey and cooperating county agents. A small amount of follow-up work the next year results in practically permanent elimination of the pests. The saving in this year's crop alone from the poisoning campaign the present season in North Dakota, in which the squirrels on more than 4,500,000 acres were poisoned by over 16,000 cooperating farmers, is estimated by the director of the extension service of that State at more than \$1,500,000 to \$2,000,000 in crop returns. Great savings are being effected through the extermination of jack rabbits. The killing by poison of 45,000 jack rabbits in Power County, Idaho, in one campaign saved the farmers of this county \$25,000, according to the director of the State extension service. The extermination of ground squirrels and prairie dogs can be accomplished on heavily infested lands at a cost of five to eight cents per acre where labor is employed to distribute the poison. Where farmers distribute the poison, as in the cooperative campaigns, the cost outlay is reduced to much less. Enormous quantities of foodstuffs are destroyed by rats while in the field and in storage. The national campaign which the Biological Survey has started against these pests is certain to result in a material saving in both 1917 and 1918.		
<i>Control of predatory animals and rabies</i>	\$250,000	\$250,000
A systematic and economic campaign for the destruction on Government forests and other public domain of wolves, coyotes, and other mammals destructive to live stock; and control of the depredations of wild animals in the areas in which rabies is prevalent in order to prevent its spread. During the past fiscal year 556 wolves, 22,342 coyotes, 107 mountain lions, and 3,053 bobcats were taken, and large numbers in addition were destroyed by poisoning campaigns. The receipts from the sale of skins saved amounted to over \$34,000. This work has resulted in a great saving of meat and wool producing live stock. Three States and many live-stock associations throughout the West have provided funds for cooperation with the bureau in employing hunters to destroy these animals. Predatory animals destroy more than \$20,000,000 worth of live stock annually on western ranges. A number of the stock growers' associations are abandoning the bounty system in favor of the methods employed by this bureau. As a result of the campaign conducted by this bureau in cooperation with local authorities and stockmen, the losses from rabies among predatory wild animals have been checked and danger to human life greatly reduced. Outbreaks of rabies in a number of places have been suppressed. During the fiscal year it is planned to continue and extend the bureau's work in connection with the extermination of rodents on public lands, the destruction of predatory animals, and the control of rabies. Demonstrations will be continued and increased effectiveness realized in the cooperative work as a result of a wider knowledge of the success of the Biological Survey. The bureau's activities in the rodent and predatory-animal control work are resulting in a large increase in crops and live stock, thus directly adding to the Nation's food supply on a large scale.		
BIOLOGICAL INVESTIGATIONS	\$25,000	\$25,000
To determine the distribution, abundance, and habits of the bird and mammal life on the public domain, particularly the national forests and Federal reserves, with special reference to fur bearers and species classed as game. This information is required to assist in the conservation of valuable species, particularly game birds and mammals, and for the purpose of supplying accurate information and in the restocking of areas in which certain species have become extinct. Information is also gathered concerning the habits and distribution of noxious species for use in connection with plans for their control. These field and laboratory investigations supply information which is frequently desired by institutions and individuals throughout the country, as well as by State and Federal departments. Information concerning the breeding and wintering places of the various species of birds in the United States is used as a basis for formulating regulations adopted under the provisions of the Federal migratory-bird law. Work on biological surveys was conducted during the past fiscal year in Alabama, Arizona, California, Georgia, Montana North Dakota, and Oregon. During the present and coming fiscal year it is planned to continue work in the States of Arizona, Florida, Montana, Washington, and Wisconsin.		

SUMMARY OF PRINCIPAL ACTIVITIES OF BUREAU OF BIOLOGICAL SURVEY—Contd.

Appropriations and activities.	Allotment (lump fund).	
	1918	1919
ENFORCEMENT OF THE MIGRATORY-BIRD LAW.....	\$50,000	\$50,000

For the protection of migratory game and insectivorous birds under the terms of the act of Congress passed March 4, 1913, and the regulations issued thereunder by the Secretary of Agriculture.

This law, which has been indorsed by the National Association of Game and Fish Commissioners, the National Grange, and leading sportsmen and conservationist societies, through the abolition of spring shooting, has brought about a remarkable increase in wild fowl. This is shown by reports received by the bureau from game commissioners and sportsmen in nearly every State in the Union. More wild fowl have been killed and used for food during the past year than for many years, involving a direct and distinct increase in the food supply of the Nation, which is so important at this time. This result has been accomplished largely through an educational campaign conducted by the bureau field force, which has created and fostered a healthful sentiment in favor of the observance of the law. Twenty-four States have amended their game laws to conform with the Federal regulations and others have announced their intention of doing the same.

AGRICULTURE APPROPRIATION BILL

HEARINGS

BEFORE THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

SIXTY-FIFTH CONGRESS

SECOND SESSION

IN THE

AGRICULTURE APPROPRIATION BILL

OFFICE OF PRINTING AND DISSEMINATION

OFFICE OF PUBLICATIONS

NOVEMBER 1917



WASHINGTON

U.S. GOVERNMENT PRINTING OFFICE

1917

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1. The first part of the document is a list of the names of the persons who have been appointed to the various offices of the government. The names are listed in alphabetical order, and each name is followed by the name of the office to which the person has been appointed. The list is as follows:

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9. The ninth part of the document is a list of the names of the persons who have been appointed to the various offices of the government. The names are listed in alphabetical order, and each name is followed by the name of the office to which the person has been appointed. The list is as follows:

10. The tenth part of the document is a list of the names of the persons who have been appointed to the various offices of the government. The names are listed in alphabetical order, and each name is followed by the name of the office to which the person has been appointed. The list is as follows:

an assistant who reads all the manuscripts for constructive criticism and suggestions. These editors who are transferred from the Division of Publications have for some time been on detail to the office of the Secretary. The suggested changes merely provide for the actual transfer of these employees to the Secretary's office.

The CHAIRMAN. So that, as a matter of fact, in the Division of Publications you have no more editorial work at all? It is merely printing?

Mr. HARRISON. Printing and distribution.

Mr. HAUGEN. Has that been the practice all the time?

Mr. HARRISON. Since August, 1915. It was thought that we could get much better results by having the work done under the immediate direction of the Secretary, that the bureaus would be more willing to receive and act upon suggestions coming from some one in the office of the Secretary who could act directly for him. It should be understood, of course, that the change did not involve any criticism of the Division of Publications.

Mr. HAUGEN. I just simply asked the question in order to find out.

The CHAIRMAN. That accounts, Mr. Arnold, for the changes in 1, 2, 4, 5, 6, 7, and 8?

Mr. ARNOLD. Yes, sir. Mr. Harrison has stated it very accurately.

Mr. HAUGEN. What would be the function of this division—simply the distribution of documents?

Mr. HARRISON. Printing and distribution; the mechanical handling of the publications. After the reading and constructive criticism has been completed in the office of the Secretary the manuscripts are forwarded to the Division of Publications for printing and Mr. Arnold makes all arrangements for printing, also for the distribution of the completed documents.

Mr. ARNOLD. Mr. Harrison will bear me out in this: That there is an enormous amount of miscellaneous printing other than publications strictly.

Mr. HARRISON. Yes; what we call "job printing" is still, of course, under the supervision of the Division of Publications. I may say in connection with this change that since the outbreak of the war the distribution activities of the Division of Publications have been very largely increased because of the large number of emergency leaflets, posters, circulars, etc., that have been issued. The Division of Publications also handles a great deal of mimeograph and duplicating work. The press notices, for instance, are prepared in the Office of Information and the Division of Publications duplicates them, keeps the mailing lists, and arranges for their mailing.

Mr. ARNOLD. While we have been relieved of the additional work, we have more than enough to keep us busy. There is an enormous amount of printing and distribution of emergency documents.

The CHAIRMAN. I notice in item 15 you have an increase of two draftsmen, at \$1,200 each, submitted. Briefly, why do you need these additional men?

Mr. ARNOLD. As very well stated in the notes, the work in that section of the office has for a long time been at least two months in arrears. The amount of work we are called upon to do for the different bureaus, and particularly, I may say, for the Office of Information in connection with the preparation and the distribution of

informational material, has recently been very greatly increased, so that we are now greatly behind, and I do not really believe we can ever get caught up with the employment of these two additional men.

Mr. HARRISON. We are required to report quarterly to the President any work that is in arrears, and for the last two of three years this is about the only branch of the department that we have had to report as being in arrears. This situation is due entirely to lack of adequate assistance.

Mr. McLAUGHLIN. When was this written—several months ago—when it was stated that the drafting work was two months in arrears?

Mr. ARNOLD. That was written. I suppose, in October.

Mr. HARRISON. October.

Mr. McLAUGHLIN. In the meantime you have not been able to catch up?

Mr. ARNOLD. No, sir.

The CHAIRMAN. Item 18; you have submitted one laboratory aid at \$720.

Mr. ARNOLD. That is in connection with the motion-picture work. As you have a representative here, I presume he will discuss that in detail.

The CHAIRMAN. In item 28 you have asked for an increase of three clerks, at \$840 each.

Mr. ARNOLD. Yes, sir; these clerks are urgently needed to keep the work up to date; but, as a matter of fact, I do not believe we will be able to do it, even with the three additional clerks that we have requested here. The correspondence work and the applications for information since the outbreak of the war have very greatly increased. A very important branch of the work of the Division of Publications is the service it renders as a sort of bureau of general information. Everybody throughout the United States writes to the department, and most of the communications come to the Division of Publications for information with regard to agriculture. If the inquiry can be answered by printed publications, the bulletins are sent. If the inquiry can not be answered in that way, the correspondence is referred to some bureau of the department where it can be answered by special letter, or information is specially prepared to meet the case. Sometimes the information can not be furnished by the department at all, and then we refer the inquiry to the department of the Government having jurisdiction in the matter. I mention that as showing really an important part of our work, and that is work that requires, in order to do it promptly, an increase in our force.

Mr. OVERMYER. Are those salaries large enough to attract competent men?

Mr. ARNOLD. They are not; or competent women either.

Mr. HAUGEN. Can the services of 21 clerks be had at \$840?

Mr. ARNOLD. It is very difficult to get a clerk at \$840 and difficult to retain those we now have.

Mr. HAUGEN. How does the character of this work correspond with the work done by other departments?

Mr. ARNOLD. Some of these clerks are not—I do not think any of these are—stenographers and typewriters; but after we get hold of them and find that they can do stenographic and typewriting work

we sometimes utilize that accomplishment on their part. A good part of their work is routine clerical work.

Mr. OVERMYER. Take those items 16, 17, and 18, assistant photographer, lantern-slide colorist, and laboratory aid: are those positions requiring special skill?

Mr. ARNOLD. Yes; they are.

Mr. OVERMYER. You are offering \$900, \$840, and \$720. Is it contemplated that these people shall give all their time to the work?

Mr. ARNOLD. They do; and we will have difficulty in getting men for \$900 or the lantern-slide colorist for \$840. The lantern-slide colorist we now have is a lady who is the finest artist in the city, and is so recognized in different parts of the Government. The additional laboratory aid is needed in connection with the motion-picture laboratory.

Mr. HARRISON. We suggested several increases in salary in the Division of Publications last year, but they were all eliminated when the 5 and 10 per cent provision was inserted. I think we suggested that the lantern-slide colorist should be increased to \$1,000.

Mr. ARNOLD. Yes.

Mr. HAUGEN. Has the department investigated as to the number of eligibles in the list at \$840?

Mr. HARRISON. No, sir; we have not.

Mr. HAUGEN. Can you give any estimate?

Mr. HARRISON. No, sir; I can not.

Mr. ARNOLD. It is extremely difficult to persuade anyone on the outside to accept a position at \$840.

Mr. HUTCHINSON. What do you mean by the clause, "These new places, if allowed, will be filled by original appointments"?

Mr. HARRISON. It means that the places will not be filled by promotion.

Mr. ARNOLD. As a matter of fact, that could hardly occur in our division, as we have no clerks at \$720. We could not promote.

Mr. HUTCHINSON. You do not mean to say that these people have been let off, or something, and are then to be reappointed?

Mr. ARNOLD. No, sir; the idea was that we would go to the Civil Service Commission and get new clerks.

Mr. HAUGEN. Make new appointments?

Mr. ARNOLD. As a matter of fact, that clause might be disregarded, because we have no \$720 clerks. The committee, you will remember, was kind enough to abolish the grade of \$720 some years ago, by which I believe that justice was done to the clerks in the Division of Publications.

Mr. McLAUGHLIN. Before you get away, would you suggest a salary of \$1,000 for that lantern-slide colorist? Is she in any way an assistant to or subordinate to the one above, the photographer?

Mr. ARNOLD. No, sir; she is not an assistant, but is worth \$1,000.

Mr. McLAUGHLIN. The salary of the photographer is only \$900.

Mr. ARNOLD. We will have difficulty in getting a photographer at \$900.

Mr. McLAUGHLIN. You won't have to get one. You have one now at \$900.

Mr. ARNOLD. Yes, sir. But what I mean to say is that we won't be able to keep him, because he is threatening now to leave us. He

has been offered a better position. I am not sure whether he has accepted yet or not.

The CHAIRMAN. How many resignations have you had from your division this year?

Mr. ARNOLD. I should say about 50 during the last fiscal year.

The CHAIRMAN. What type of men and women; what grade and salary?

Mr. ARNOLD. Leaving \$840 and \$900 to go out for \$1,000.

The CHAIRMAN. Mostly where have they gone?

Mr. ARNOLD. Principally to the War and Navy Departments and to the Bureau of Internal Revenue, in the Treasury Department. I recollect the case of one young man, who received the salary of \$840, who resigned to go to the War Department at \$1,000 about six months ago, and he is now receiving \$1,600 there.

Mr. HARRISON. It would be impossible for such transfer to be made now, because of a provision included in the deficiency act of October 6, 1917.

Mr. ARNOLD. We have made an effort, but have never succeeded in getting the requisite number of men to do that emergency work. We have had to wait weeks and months to receive a certification to fill vacancies in the grade of skilled laborer.

Mr. HAUGEN. Do you mean that you have had to wait in all of these classes—in the lower grades?

Mr. ARNOLD. In every class. It is true of every grade.

Mr. HAUGEN. It is true in every department, in every division.

Mr. ARNOLD. We wanted to get eight skilled laborers at \$720. We waited two months; we could not get them. So we took boys at \$480. We have not been able to get them yet. We have been greatly hampered since the outbreak of the war by our inability to secure and retain the necessary force.

Mr. HARRISON. That has been true in nearly every branch and every department of the Government. The Bureau of Plant Industry, for instance, now has 75 vacancies. It is just the same throughout the Government.

Mr. HAUGEN. Is that the same through all the departments?

Mr. ARNOLD. Yes, sir.

The CHAIRMAN. It is true through every industry in the United States. The Government here is no exception. It is true on the farm.

Mr. HARRISON. And we are merely bearing our portion of the burden which the war has thrust upon the Nation.

Mr. HAUGEN. And if the Government raises the salaries it would relieve the situation very little?

Mr. HARRISON. That is a question—the demand is so large.

Mr. ARNOLD. I think you will have less difficulty in getting clerks if you pay more than \$840.

Mr. HARRISON. The War Department is calling for very large numbers of clerks, and I imagine the Civil Service Commission is giving it preference. Naturally that causes difficulties in the other departments. The War Department, I understand, may call at one time for four or five hundred clerks and want them the next morning.

Mr. HAUGEN. How many have left the department and gone into the Army.

Mr. HARRISON. Over a thousand.

Mr. HAUGEN. That is what caused the vacancies?

Mr. HARRISON. That is one of the causes.

Mr. HAUGEN. Have you made any investigation as to the comparison of salaries?

Mr. HARRISON. No; it would be exceedingly difficult, on account of the unsettled conditions, to make a useful comparison.

The CHAIRMAN. I presume it goes without saying that these newer activities made a tremendous increase in the number of clerks in the War Department and some in the Navy, and I presume the fuel and food administrations and the other new activities are paying higher salaries than the old activities.

Mr. HARRISON. That is true, because they had to have a large number of clerks and have them immediately.

Mr. HAUGEN. I think it is fair that they should be given preference in many cases.

The CHAIRMAN. A great many of the people on the statutory rolls have been here for many, many years and are located here in Washington, have they own homes here, are living with their own people, and are a part of the permanent population of Washington.

Mr. ARNOLD. That is true.

The CHAIRMAN. A great many of the people coming into these activities are here only temporarily. At least we hope so. One of the difficulties will be to get them back home.

Mr. HARRISON. I understand that the War Department is employing them merely for the duration of the war.

Mr. ARNOLD. Nevertheless, it produces a discouraging effect on the people who are here and have been rendering satisfactory service for many years. I am very glad to have this matter discussed here on behalf of these people, because the Division of Publications is a hard-working division, does real work, and I claim that there is no force in the Government that does harder work, and more of it, and perhaps as satisfactorily, as the force in the Divisions of Publications.

The CHAIRMAN. You are very loyal to your folks.

Mr. ARNOLD. I am very glad to say that. What I said about clerks I want to say about skilled laborers. Some of those people are not receiving salary enough to live decently.

The CHAIRMAN. You have got three new ones submitted.

Mr. ARNOLD. Yes, sir. We need three.

Mr. HARRISON. They will probably be messenger boys?

Mr. ARNOLD. Probably so.

The CHAIRMAN. Those three people are needed on account of additional work in your division?

Mr. ARNOLD. Yes, sir; they are much needed. We are with great difficulty keeping up with the work.

The CHAIRMAN. Where do you get most of your messenger boys?

Mr. ARNOLD. From the District of Columbia.

The CHAIRMAN. You have had some kind of a let down by the civil-service law?

Mr. ARNOLD. Yes; it has occasionally been made much easier to secure employees temporarily outside the civil service; we have been able to do that. We have had a very difficult time to keep the work going satisfactorily under all of the disadvantages that we have been compelled to labor under during the last eight months.

Mr. HAUGEN. What is the character of the work done by the laborers?

Mr. ARNOLD. They are engaged in folding, wrapping, sealing, addressing, and mailing publications; also in operating duplicating machines.

Mr. HAUGEN. Are many of your people required to work overtime?

Mr. ARNOLD. Yes, sir, very frequently; and I want to say that they do it loyally.

The CHAIRMAN. Mr. Arnold, take up your general expense items, on page 143. The first item, No. 49, for labor-saving machinery, \$3,500. There is no change in that?

Mr. ARNOLD. No, sir.

The CHAIRMAN. Item 50, for envelopes, stationery, material, \$7,500. There is an increase of \$1,000 there. Briefly, what does that refer to?

Mr. ARNOLD. That is used principally for paper and materials used in the distribution of information material, most of it emergency material.

The CHAIRMAN. In other words, the publication work of the department has very greatly increased on account of the war?

Mr. ARNOLD. Enormously increased.

Mr. HARRISON. The Secretary's report shows that between April 1 and November 15 we distributed 21,000,000 emergency publications and an equal number of regular publications, making a total of 42,000,000.

Mr. ARNOLD. I was just going to read a statement showing the increased activity of the department. Will you allow me to insert a statement of the emergency material that has been prepared?

The CHAIRMAN. Yes; put that in the record.

Mr. ARNOLD. I shall be glad to.

(The statement referred to follows:)

EMERGENCY PUBLICATIONS ISSUED AND DISTRIBUTED BY THE DEPARTMENT OF AGRICULTURE, APRIL 1 TO OCTOBER 31, 1917, INCLUSIVE.

FARMERS' BULLETINS.

Among the most widely distributed Farmers' Bulletins designed to increase garden production were the following:

	Number of copies.
No. 255. The Home Vegetable Garden.....	100, 000
No. 818. The Small Vegetable Garden.....	1, 060, 000

Some of those issued to induce the preservation of the garden crops after production were the following:

	Number of copies.
No. 203. Canned Fruits, Preserves, and Jellies.....	250, 000
No. 359. Canning Vegetables in the Home.....	160, 000
No. 839. Home Canning by the One-Period Cold-Pack Method (For Use in the North).....	1, 500, 000
No. 841. Drying Vegetables in the Home.....	1, 200, 000
No. 852. Home Canning of Fruits and Vegetables (Designed for Use in the South).....	500, 000
No. 871. Fresh Fruits and Vegetables as Conservers of Other Staple Foods.....	200, 000
No. 879. Home Storage of Vegetables.....	230, 000
No. 881. Preservation of Vegetables by Fermentation, Pickling, and Salting.....	300, 000
No. 900. Homemade Fruit Butters.....	100, 000
No. 903. Commercial Evaporation of Fruits.....	100, 000

CIRCULARS, LEAFLETS, ETC.

Special circulars, leaflets, etc., widely distributed included:

	Number of copies.
Food Thrift Series 1, 2, 3, 4, 5, and 6.....	1, 430, 000
Preserving Eggs in Water Glass and Limewater.....	300, 000
Conserve Food: Begin Now.....	100, 000
Wastes.....	100, 000
President's Appeal.....	505, 000
Potato Grades Recommended by the United States Department of Agriculture.....	175, 000
Start the Day Right.....	500, 000
Do you Know Corn Meal?.....	500, 000
A Whole Dinner in One Dish.....	500, 000
Choose Your Food Wisely.....	500, 000
Food for Your Children.....	500, 000
Do You Know Oatmeal?.....	500, 000
Make a Little Meat Go a Long Way.....	500, 000
Partial Substitutes for Wheat in Bread Making.....	100, 000

POSTERS.

Closely following the declaration of war the department began the issuance and wide distribution of posters, comprising the following:

	Number of copies.
Dairy Farmers! It's Your Patriotic Duty to Stop Milk Wastes Now..	20, 000
Spilled Milk.....	20, 000
Make Every Egg Count.....	100, 000
Help Feed Yourself.....	300, 000
Waste No Food.....	100, 000
Special Appeal to Farmer Patriots.....	240, 000
Farmers, Housewives, Children.....	300, 000
Select Seed Corn.....	55, 000
President's Proclamation.....	14, 500
Farm Help.....	210, 000
Plant Corn.....	70, 000
Cultivate Your Corn.....	150, 000
Help a Farmer.....	213, 000
Eat More Corn.....	100, 000
Eat More Cottage Cheese.....	39, 000
Wheat Seeding Calendars.....	68, 500
Rat Poster.....	125, 000

Publications on the general subject of the use and conservation of foods included:

	Number of copies.
Farmers' Bulletin No. 807. Bread Making.....	630, 000
Farmers' Bulletin No. 808. How to Select Foods—I.....	410, 000
Farmers' Bulletin No. 817. How to Select Foods—II.....	110, 000
Farmers' Bulletin No. 824. How to Select Foods—III.....	100, 000
Farmers' Bulletin No. 565. Corn Meal.....	250, 000

The CHAIRMAN. The next item is for office furniture and fixtures, \$1,320. Any change?

Mr. ARNOLD. No, sir.

The CHAIRMAN. Next, photographic equipment, photographic materials, artists' tools and supplies. That is your motion-picture work?

Mr. ARNOLD. No change there.

The CHAIRMAN. Gentlemen, do you desire to ask any questions on that? You know about what it is. Mr. Henderson, we would be glad to have you make a brief statement.

Mr. HAUGEN. How does that salary compare with what they are paid other places?

Mr. ARNOLD. Three, I think, have resigned to enter the service of the War Department at greatly increased salaries. Three of our draftsmen have resigned to enter the service of the War Department at \$2,200 from positions now paying \$1,400 and \$1,600. It is very difficult to keep people at those salaries.

Mr. HAUGEN. Have you investigated as to the salaries paid outside the departments?

Mr. ARNOLD. I investigated about a year ago and found that the salaries outside average from \$25 to \$50 a week for expert photographers. Some expert photographers in this city get as high as \$75 a week.

Mr. HAUGEN. What is the average?

Mr. ARNOLD. About \$40 to \$60, including motion-picture photographers.

Mr. HAUGEN. Does the work done in your division require the same skill as that done outside?

Mr. ARNOLD. I think it requires greater skill. I think the Government has fixed a standard that the work ought to be done, and is better done than work you can get done outside.

Mr. McLAUGHLIN. Why should there be a constant appropriation for labor-saving machines and for furniture and fixtures?

Mr. HARRISON. The machines must be repaired or replaced from time to time. The division does a large quantity of mimeographing and duplicating work.

Mr. McLAUGHLIN. Is that what that labor-saving machine item is for, to replace those that are worn out?

Mr. HARRISON. To buy new ones as the old ones wear out, if they are in such condition that they can not be repaired.

Mr. ARNOLD. We have folding machines also that fold these documents, paper-cutting machines, stencil-cutting machines, etc.

Mr. McLAUGHLIN. They last just the one year?

Mr. HARRISON. They last longer than that, but naturally there must be constant replacement and repairs. The machines are bought at different times, and there are repairs and replacements to be made on some of them every year.

The CHAIRMAN. We will omit the motion-picture business for the moment. In item 53 you have an increase of \$250 for telephone, freight, and express. This is due to expressage on films?

Mr. ARNOLD. That is true. There is considerable in the way of express charges to be paid in connection with that work.

The CHAIRMAN. And your next change is in item 54, where you have changed the language by the addition of the words "motor trucks."

Mr. ARNOLD. Yes, sir.

The CHAIRMAN. Do you contemplate buying a motor truck for the work?

Mr. ARNOLD. No, sir; we have one.

The CHAIRMAN. How are you using it?

Mr. ARNOLD. In the delivery of documents up here at the Capitol and in the delivery of mail to the post office and around the various bureaus and departments.

The CHAIRMAN. You have a motor truck now?

Mr. ARNOLD. Yes, sir.

The CHAIRMAN. You are just letting us know that.

Mr. McLAUGHLIN. Will you keep your old equipment—the horses, wagons, and other equipment?

Mr. ARNOLD. We have found need for them. We had only two of them. We found need for the motor truck with the enormous amount of work that is sent to the Government Printing Office. The work comes from the Government Printing Office to the Division of Publications and then is redistributed. The Government Printing Office insists on having one central place to deliver the work to.

Mr. McLAUGHLIN. What kind of motor truck is it? The entire appropriation is only \$500. That provides for horses and harness.

Mr. ARNOLD. We are not going to buy a motor truck. We are going to buy oil, etc., to maintain it. The same is true of wagons. We have to buy harness. We have to provide numerous repairs to vehicles.

Mr. McLAUGHLIN. You have another appropriation out of which you bought the truck?

Mr. HARRISON. That was bought out of the allotment which was made to the Division of Publications from the food production act. We found that we had to have a truck on account of the enormous increase in the publication activities of the department, made necessary by the work under that act. We found that we could not handle the increased volume of work with the existing equipment, and it was merely a question of economy to provide a truck for the purpose.

Mr. YOUNG of North Dakota. This appropriation is merely for maintenance?

Mr. ARNOLD. Merely maintenance.

Mr. HAUGEN. Do I understand you want to buy another motor truck?

Mr. ARNOLD. No; this is simply for maintenance.

Mr. HAUGEN. I think it was a good investment.

Mr. ARNOLD. Some people at the Capitol have complimented us on the rapidity with which we have delivered documents.

The CHAIRMAN. How many vehicles have you?

Mr. ARNOLD. Two wagons.

The CHAIRMAN. And two horses?

Mr. ARNOLD. Yes, sir.

The CHAIRMAN. How many wagons?

Mr. ARNOLD. Two wagons.

The CHAIRMAN. One motor truck?

Mr. ARNOLD. One motor truck.

The CHAIRMAN. What did that motor truck cost?

Mr. HARRISON. I think it was \$985. It is a Studebaker truck; the same kind that is generally used in Government service. The truck is on the General Supply Committee schedule.

Mr. HAUGEN. A six cylinder?

Mr. HARRISON. I do not know.

The CHAIRMAN. No. 56 is a new item for extra labor and emergency employments in the District of Columbia, \$2,500.

Mr. ARNOLD. Yes, sir. That amount is required to enable us to bridge over that extremely busy period from January to April. We

are entering upon it right now. During that period the correspondence and the mailing and the handling of publications is greater than at any other period of the year. Some of you gentlemen may have noticed that there has been some delay in filling your requests in those months. The mail is so much greater at that time that we can not handle it promptly, and we need this amount to provide additional assistance. It is proposed to employ a certain number of clerks and a certain number of skilled laborers for a period, say, of three months; that will get us through all right and will enable us to prevent that delay. Some of you gentlemen will remember that a clause like this was in the appropriation for the Division of Publications some years ago, and it was thought to be a great convenience, and it contributed greatly to the expedition of our business.

The CHAIRMAN. Why did it go out?

Mr. ARNOLD. I do not remember. It was several years ago, but for some reason it was left out.

Mr. McLAUGHLIN. What salaries will you have to pay for the work as compared with similar work done by those steadily employed?

Mr. ARNOLD. I had figured \$840 as a salary for that period, divided up equally between clerks and skilled laborers.

The CHAIRMAN. Anything further, gentlemen?

Mr. HUTCHINSON. You said that a number of your people resigned. Why should they resign permanent positions to accept temporary places?

Mr. ARNOLD. They do not think they are temporary. I have raised that question with some of them who have left, and they seem to think that they are going into permanent positions.

Mr. HUTCHINSON. They are temporary—during the period of war?

Mr. ARNOLD. I do not know. I, personally, should think that they are temporary, but really I do not know how those positions are classed.

Mr. HARRISON. I understand that those in the War Department are appointed only for the duration of the war, and that is necessarily true of the Fuel and Food Administrations.

Mr. ARNOLD. A great many of our people have gone to the Internal-Revenue Bureau, where they seem to think that extra clerical assistance will be required for many years to come, and I expect that is true.

The CHAIRMAN. Anything further, gentlemen?

Mr. ARNOLD. May I say just one word? I want to talk about the delay in the distribution of Farmers' Bulletins last summer. You all remember that the department undertook a campaign of education to secure increased production at that time, and it issued some farmers' bulletins specially prepared to meet the emergency situation, and we did get the bulletins out, but there was some delay in getting them out, and sent them all over the country. I think I have explained to some of you that it was a fact that the delay was absolutely unavoidable. The delay was due to the department's inability to secure the necessary printing at the Government Printing Office. I think most people recognized the situation and raised little complaint, but I thought this explanation was due. Fortunately, I may say that I have been advised by the Government Printing Office that the print-

ing of illustrated Farmers' Bulletins, of which a great many are required by the department, will be somewhat expedited by the installation of improved equipment as soon as the same can be procured.

The CHAIRMAN. That is encouraging. We are much obliged to you, Mr. Arnold. We will hear from Mr. Henderson about the motion-picture work.

STATEMENT OF MR. W. C. HENDERSON, CHAIRMAN OF THE COMMITTEE ON MOTION-PICTURE ACTIVITIES, UNITED STATES DEPARTMENT OF AGRICULTURE

Mr. HENDERSON. There is no increase in that item, as I understand it, and I expect no increased allotment for motion-picture work.

The work of the department along this line which has been carried on for the past several years has been developed during the last six months, and we have circulated our pictures direct, through our own officials and collaborators in the several States. Our men have shown them 650 times to 217,000 people. In addition, we have shown them to others from whom we have not had any reports. We have also been in cooperation with other departments, principally in connection with the War Department and the Committee on Public Information. During the summer, while they were preparing their own laboratory, we assisted the Signal Corps of the Army to quite an extent, took pictures for them, printed some of their pictures, and screened films sent from over across the water. At the present time we are allowing the Committee on Public Information to use our laboratory. They have put in additional people there who will be under the direction of our men, and they expect to be able to turn out about 100,000 feet of film a week. That saves duplication in equipment, and their work will be done so as not to interfere with our work.

In carrying out the authority of Congress to loan pictures we entered into a contract with the Universal Film Manufacturing Co., of New York, for the distribution of our pictures. We found that the only way we could get a good contract was to give the exclusive rights to one company for at least one year. We interviewed a large number of companies and submitted requests for proposals from 20 of the larger operators. We received six or eight proposals and selected the offer of the Universal as on the whole being the best. They agreed to pay 10 cents a foot for the negative used, furnish us 6 copies for our own work in the department, keep 30 copies of our negatives in circulation, and sell us what additional positives we wanted to buy from them at 4 cents a foot. This price is a little less than we could make them ourselves. That contract became effective November 30, and they are releasing our pictures every two weeks now. It is possible that they will release them a little faster after we get the thing in full operation.

We are planning to produce during the coming season at least a thousand feet a week. We have approximately 20,000 feet in preparation at the present time. Our operator just now is in the West. He has been down in Texas and was to go into Oklahoma photographing the cattle in the drought-stricken region in Texas, the work in the control of hog cholera, and this pink bollworm work, which

Dr. Howard mentioned, and he expected to take some pictures of game on the Wichita National Forest. We have a lot of buffalo there and, I think, other animals.

The CHAIRMAN. Any question, gentlemen?

Mr. McLAUGHLIN. Aside from those things that you mentioned, what other moving pictures do you take of agricultural matters?

Mr. HENDERSON. I have a list here of the pictures we have on hand at the office. To illustrate the work of the national forests, we have, for instance, the grazing industry; what a careless hunter can do, showing the effects of dropping matches in the forest; work of a forest ranger; tree-planting pictures; and forest conservation. In the work of the Bureau of Animal Industry we have types of horses; how to construct a concrete silo; Uncle Sam's pig-club work (that is a picture that has been used by the extension workers, stimulating an interest in the greater production of pigs, particularly among young people); work illustrating the activities of the bureau out at the poultry farm; and pictures made during this past year on the subject of wool and its manufacture into cloth. Then the Bureau of Markets has several pictures illustrating its work. The Bureau of Public Roads has a number of pictures showing road construction. Then we have a number of miscellaneous pictures, such as congressional seed distribution, the strawberry industry in Kentucky, and the work to prevent the spread of the gypsy and brown-tail moths.

Pictures have been made for the purpose of stimulating food production as part of the emergency work. We circulated last fall one on canning and one on drying fruits and vegetables. It is quite probable that during the coming year we shall get out more pictures along that line to assist in the emergency work.

Mr. HARRISON. It ought to be made clear that this contract which we have entered into provides that we shall be entirely free to distribute the pictures to our official collaborators. In fact they give us six copies which we can use in that way.

Mr. HENDERSON. It not only does not interfere with the work that we have been doing in the past but gives us these additional pictures to extend that work.

The CHAIRMAN. Anything further?

Mr. YOUNG of North Dakota. The pictures you show about canning I saw at the chautauqua; they are very interesting pictures.

Mr. McLAUGHLIN. It shows the entire process?

Mr. YOUNG of North Dakota. Yes. The one I saw was at the Valley City chautauqua, and one of the Government representatives happened to be there and explained how the work ought to be done, and in connection with that he showed a lot of pictures where different people had been doing canning work over the country, designed to stimulate interest and hold the audience. It was very interesting.

Mr. HARRISON. It is not our hope that through the motion pictures we can directly teach things, but they serve a very useful purpose in stimulating interest in improved processes and practices.

Mr. HENDERSON. But the pictures of canning and drying are taken so close up to the work itself that it does give an idea as to how a person should proceed.

Mr. HARRISON. They stimulate his interest and tell him how he can get detailed instructions.

Mr. HENDERSON. We hope that he will ask the bureau or county agent to obtain more detailed information, as we suggest in the legends on the motion pictures.

Mr. YOUNG of North Dakota. In this particular case I speak of while something was heating up he went ahead and showed a lot of pictures. When he was ready to go ahead again he stopped the pictures.

Mr. HENDERSON. Of course, where the pictures are shown by one of our own officials the work can be carried along that line and he can talk while he is showing the pictures, whereas the work done by the motion-picture company will serve to stimulate interest in the work of the department.

Mr. HAUGEN. Are many of your people working with the chautauqua?

Mr. HARRISON. None are located on the chautauqua circuit, so far as we know.

Mr. YOUNG of North Dakota. This was a chautauqua gathering, and they had invited an extension worker to come.

Mr. HARRISON. Some of the extension workers, I imagine, may attend some chautauqua meetings in the course of their regular work.

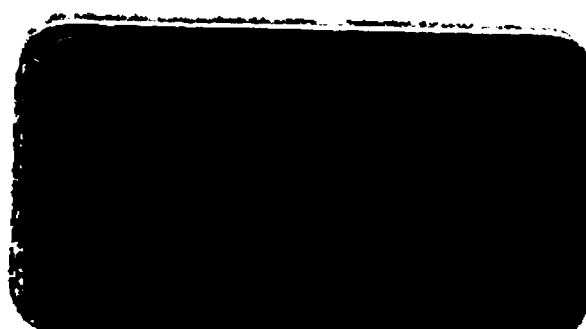
The CHAIRMAN. We are obliged to you, Mr. Henderson, and obliged to you, Mr. Arnold.

(Thereupon, at 4.48 p. m., the committee adjourned until Tuesday, January 8, at 10.30 a. m.)

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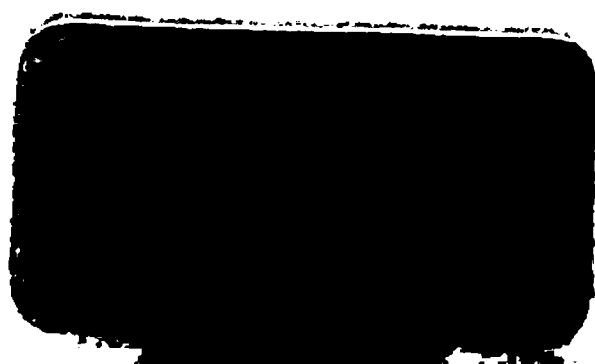
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AGRICULTURAL APPROPRIATION BILL.

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